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April 30, 2010

Ms. Jan Palumbo (AWT-121)
United States EPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101

Subject: **Supplemental Groundwater Investigation Work Plan Addendum
Former J.H. Baxter Arlington Facility
Docket No. RCRA-10-2001-0086**

Introduction

The former J.H. Baxter & Co., Inc. (Baxter) Arlington, Washington wood treating facility (the facility) is located at 6520 188th Street NE in Arlington, Washington (Figure 1). The facility is currently operated by Stella-Jones Corporation, and uses pentachlorophenol (PCP) as the primary wood treatment chemical. Numerous investigations and remedial activities have been completed at the facility since the 1990s.

Groundwater monitoring data collected in 2008 and 2009 as part of the Remedial Action Pilot Test has indicated a narrow pentachlorophenol (PCP) plume that extends beyond the facility boundary. In addition, groundwater elevation data from wells installed as part of the Pilot Test indicate that the groundwater flow is more northerly than previously estimated, and the farthest downgradient and offsite well (MW-18) may not be in the PCP plume flowpath (Figure 2).

In late December 2009, Baxter conducted the initial phase of the Supplemental Groundwater Investigation to further assess the extent of the PCP plume northwest of the Main Treating Area. This investigation was conducted in accordance with the *Revised Supplemental Groundwater Investigation Work Plan* that was submitted to EPA on June 5, 2009, and approved by EPA on August 13, 2009. Nine boreholes were completed at locations shown in Figure 3, and four grab groundwater samples were collected from different depth intervals and analyzed for pentachlorophenol (PCP). Concentrations of detected PCP in the grab groundwater samples are shown on the cross sections in Figures 4 and 5, and in plan view on Figure 6. A description of the field activities, laboratory results, and borehole logs are presented in Appendix A.

Results of the initial phase of the investigation indicated that the PCP plume trends towards the farthest downgradient well MW-18, but the area of highest PCP concentrations are present at depths between 70-80 feet deep, which is just beneath the depth of most of the existing monitoring wells in that area (see Appendix A). Based on the results from the December 2009 investigation, Baxter proposes additional boreholes and monitoring wells in the immediate area.

The following discussion summarizes a scope of work (SOW) for additional investigations at the facility to further characterize the PCP plume. The proposed SOW will be conducted in

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accordance with the Environmental Protection Agency (EPA)-approved *Site Investigation (SI) Work Plan*, and previously approved *Supplemental Groundwater Investigation Work Plan*.

Scope of Work

The original *Supplemental Groundwater Investigation Work Plan* called for an investigation in two phases: 1) installation of exploratory boreholes using hollow stem auger methods to assess the geometry of the plume, and collection of four grab groundwater samples from each boring; and 2) installation of approximately three new groundwater monitoring wells that bisect the water table. This Addendum proposes an additional seven boreholes to verify the depth of the PCP plume, and seven additional groundwater monitoring wells.

Exploratory Boreholes

In order to evaluate the horizontal and vertical extent of the dissolved phase plume offsite and to appropriately locate groundwater wells for further plume monitoring, seven additional soil borings will be installed in or near the Northwest Parcel (Figure 7). The rationale for the specific location of each borehole is provided below:

- The boreholes located near BXS-1, L-3, and MW-30 (Figure 7) are designed to assess the depth and concentration of PCP at the lateral margins of the existing PCP plume.
- The borehole located between SB-68 and SB-72 (Figure 7) is designed to evaluate whether or not PCP is potentially migrating westerly.
- Two additional boreholes are located north of 188th Street NE (Figure 7) to assess the downgradient extent of the PCP plume.

• and if there what next? Step out wells?

The northernmost proposed boring locations are located on property not owned by Baxter, and will require an access agreement. If Baxter cannot obtain an access agreement from the current property owner, Baxter will request assistance from EPA in obtaining access to the property. The remaining boreholes will be located on the City of Arlington right-of-way.

Borings will be installed using hollow-stem auger equipment. Soil samples will be collected at five-foot intervals for lithologic logging purposes and field screening (sheen testing). Each boring will be advanced to approximately 100 feet below the ground surface.

During advancement of the boreholes, screening-level groundwater samples will be collected using HydroPunch groundwater sampling equipment at the 60, 70, 80, 90, and 100 foot depth intervals. Due to the anticipated turbidity, analysis of these samples is expected only to provide qualitative data regarding the general geometry of the dissolved-phase groundwater plume.

Each screening-level grab groundwater sample will be collected from the boring by advancing a HydroPunch sampler inside the auger into undisturbed soil to the appropriate depth interval. Following advancement, the protective sleeve will be retracted to expose the well screen and allow groundwater to enter the HydroPunch sampler. Following sufficient time for groundwater to enter the sampler, a bailer will be used to extract water for placement into clean, laboratory-provided sample containers. The filled sample containers will be labeled with a unique identification number, placed in a cooler with ice, and transported to the laboratory under chain of custody.

Screening-level groundwater samples will be analyzed for PCP by EPA Method 8151M or EPA Method 8270D, with 24-hour turnaround. Based on preliminary results, the number of boreholes may be reduced or increased, as appropriate, to delineate the horizontal extent of the plume. *Note*

After completion of the soil borings and groundwater sampling, each borehole will be backfilled to grade with bentonite pellets or grout and patched to match the existing surface.

The actual locations of the boreholes may be modified in the field based on laboratory results (i.e., from newly generated laboratory results generated during the investigation), access agreements, or subsurface or overhead utilities.

Monitoring Well Installation

Based on the results of the groundwater sampling, seven new groundwater monitoring wells will be installed to provide additional downgradient groundwater sampling stations (Figure 7). Four of the new monitoring wells will be placed near existing monitoring wells near the center of the existing plume (proposed wells near MW-15, MW-18, MW-34, MW-37) to provide additional information deeper in the water-bearing zone at those key locations. One proposed well is located away from the centerline of the plume (proposed well near MW-17) to assess the lateral extent of the plume, and two additional wells are located farther downgradient (proposed monitoring well near SB-74, and proposed well northwest of MW-18). Final locations may be modified in the field based on laboratory results (i.e., from newly generated laboratory results generated during the investigation), access agreements, or subsurface/overhead utilities.

The new monitoring wells will be installed using hollow-stem auger drilling equipment to a depth of approximately 80-feet below ground surface. Soil samples will be collected every five feet to the bottom of the boring for lithologic logging purposes. The monitoring wells will be constructed using 2-inch diameter, Schedule 40 PVC casing, with 0.020-inch slot placed between 70 and 80 feet below ground surface. Following well construction and a minimum 24-hour grout stabilization period, the wells will be developed. *- development protocol?*

Following installation, the wells will be measured for horizontal control by a Washington State licensed surveyor. Vertical elevation will be surveyed to the nearest 0.01 foot at the top of all new monitoring well casings.

Upon completion of monitoring well installation activities, all facility wells will be gauged with a water level indicator. The new wells will be sampled for PCP in accordance with the Performance Monitoring Plan (PMP) in future quarterly monitoring events.

All field procedures will be conducted in accordance with procedures outlined in the Appendix B (Sampling and Analysis and Data Management Plan) of the SI Work Plan, dated May 15, 2002. *←*

Decontamination Procedures

The drilling and sampling will be cleaned before and between boreholes using tap water containing a non-phosphate detergent (e.g., Liquinox), followed by a tap water rinse, and lastly, distilled water. All decontamination fluids and purge water will be collected into a 55-gallon drum, and transferred to the onsite treatment system. Drill cuttings from the hollow-stem auger equipment will be placed into a 55-gallon drums, properly labeled and stored onsite, pending laboratory analysis and proper disposal.

Schedule

Baxter plans to conduct the scope of work outlined in this Supplemental Groundwater Investigation Work Plan Addendum within 30 days of receipt of approval from EPA, pending obtaining access agreements with offsite landowners and the City of Arlington. Results of the field activities will be submitted to EPA in the monthly progress reports and in quarterly O&M reports, and further documented in the final Corrective Measures Study.

*Why not
start
now*

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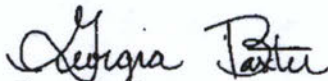
References

Baxter 2002. Site Investigation Work Plan, Revision 2, J.H. Baxter & Co., Arlington, Washington Facility. Prepared by J.H. Baxter & Co. May.

Baxter 2009. Supplemental Groundwater Investigation Work Plan, Revision 2, J.H. Baxter & Co., Arlington, Washington Facility. Prepared by J.H. Baxter & Co. June.

If you have any questions regarding this Work Plan, please do not hesitate to contact Stephen Barnett at (503) 241-8172 or RueAnn Thomas at (541) 968-9768.

Sincerely,


Georgia Baxter

cc: RueAnn Thomas, Bluefield Holdings Inc.
J Stephen Barnett, Premier Environmental Services.
Gary Dupuy, AMEC/Geomatrix

Figures

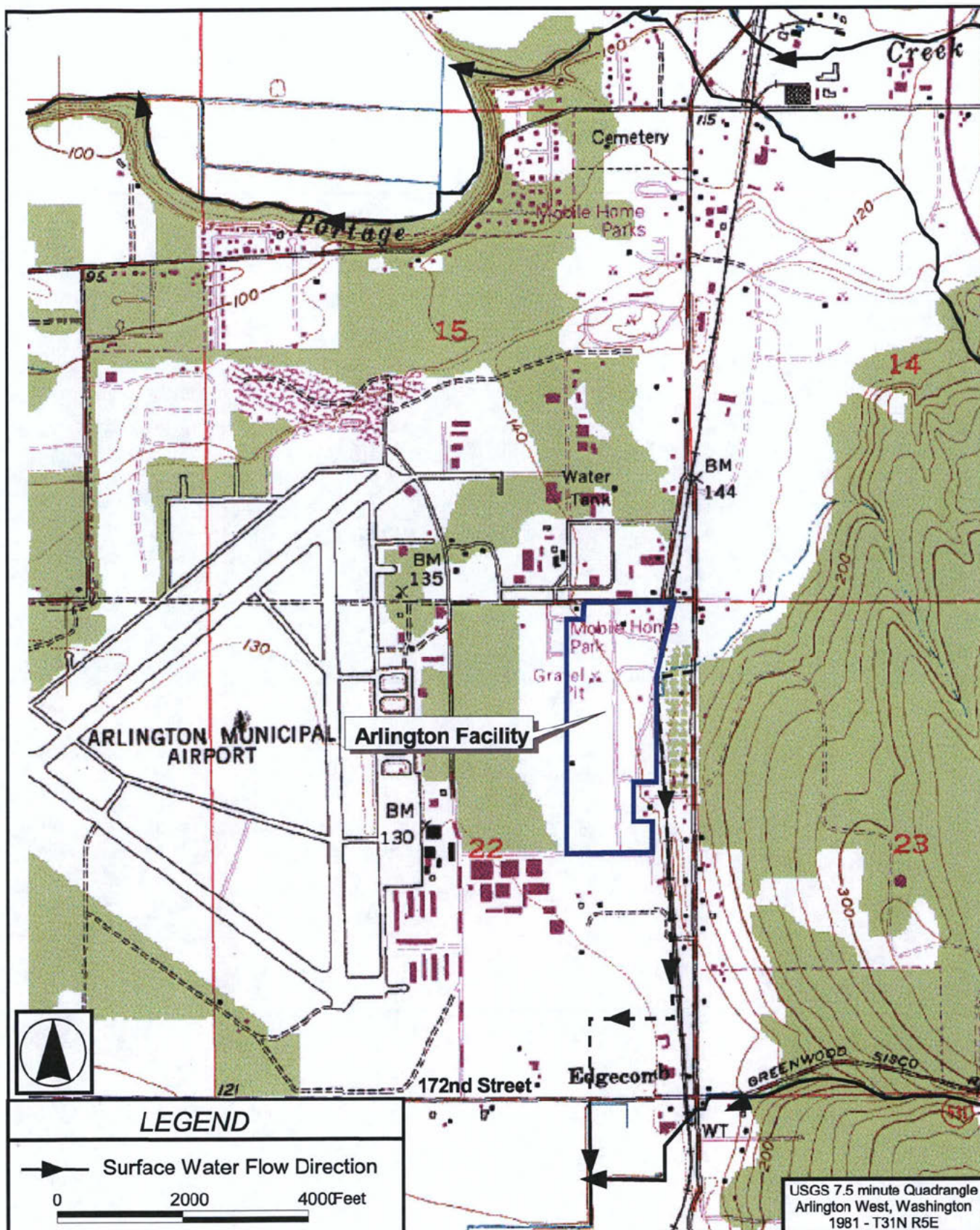
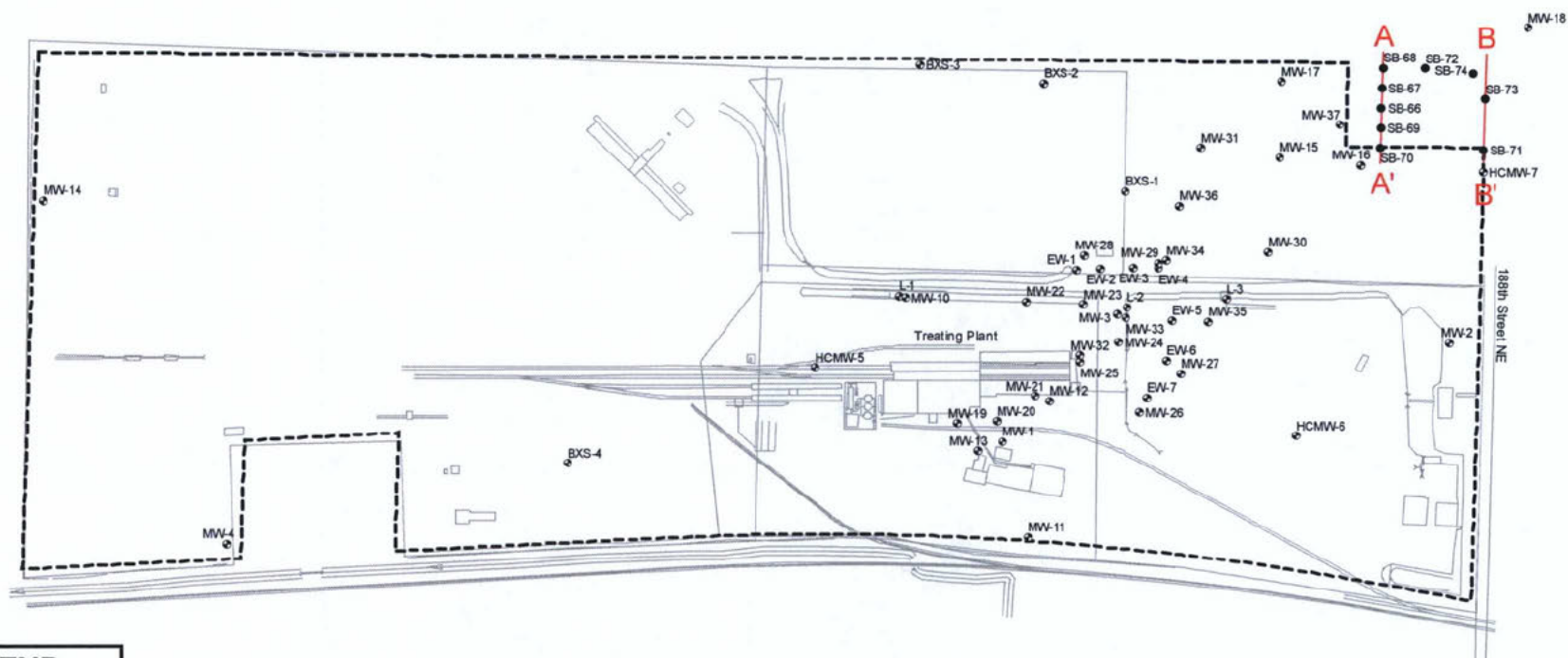


Figure 1. Site Vicinity

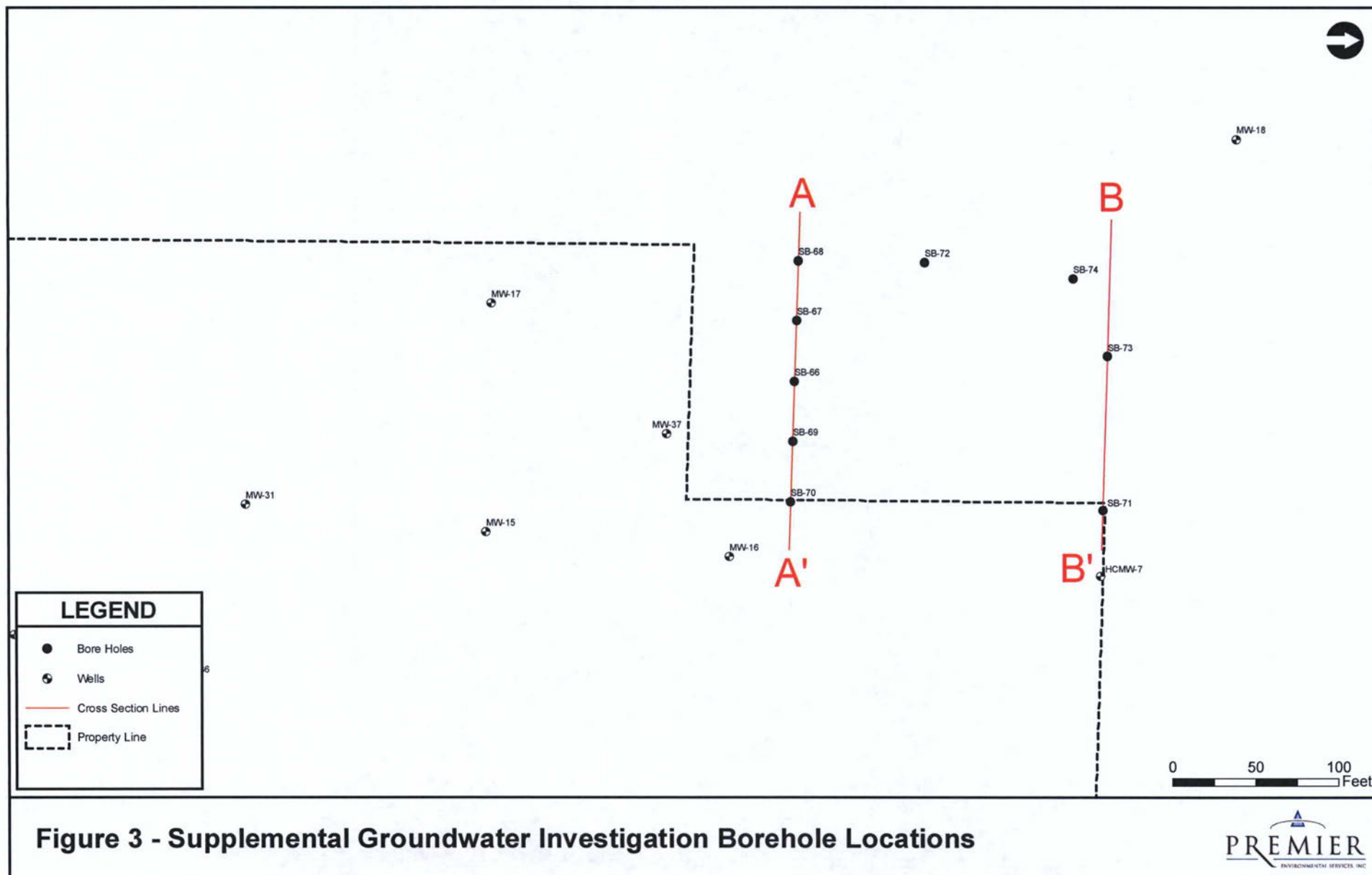


LEGEND

- Bore Holes
- ◉ Wells
- Cross Section Lines
- - - Property Line



Figure 2 - Well and Borehole Location Map



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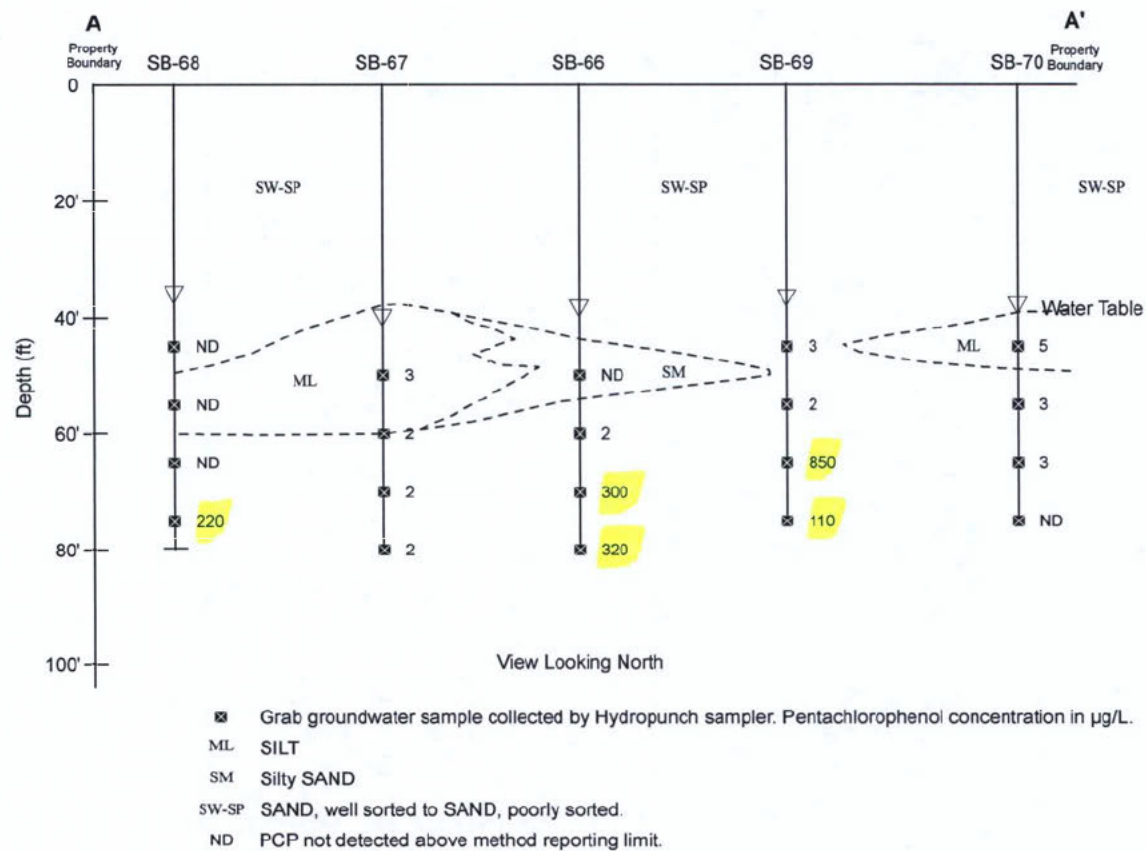


Figure 4 - Cross Section A'-A

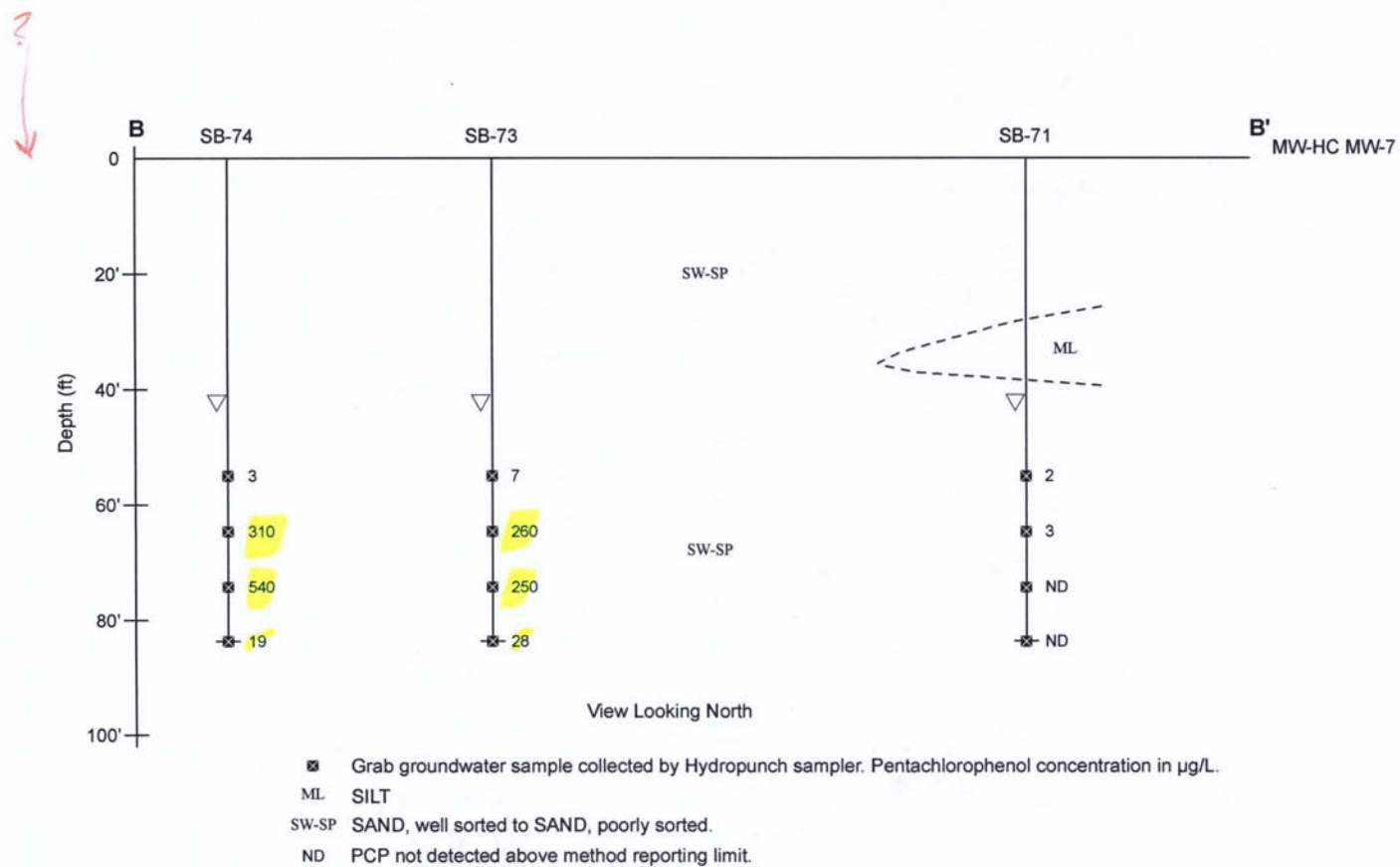


Figure 5 - Cross Section B'-B

SB-66		SB-67		SB-68		SB-69		SB-70		SB-71		SB-72		SB-73		SB-74	
Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)
50	0.5	50 and 55	2.5	45	1.0	45	3.0	45	5.4	55	2.3	55	2.3	55	6.7	55	2.4
60	1.6	62	1.7	55	1.0	55	2.2	55	2.5	65	2.6	65	2.6	65	260	65	310
68.5	300	70	2.1	65	1.0	65	850	65	3.4	75	1.0	74	7.9	75	250	75	540
80	320	79	2.3	75	220	75	110	75	1.0	85	1.0	65	2.0	85	28	85	19

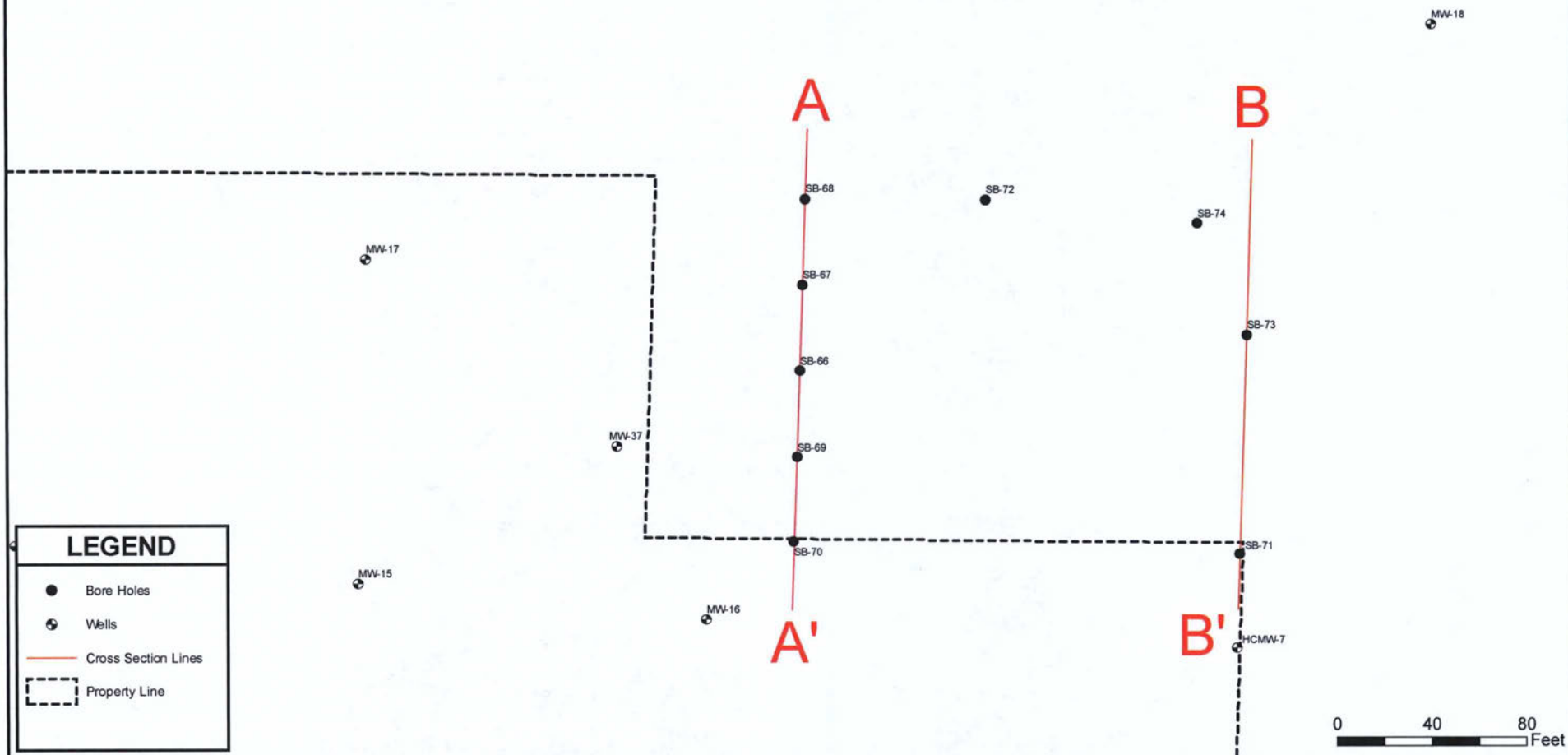


Figure 6 - Pentachlorophenol in Groundwater

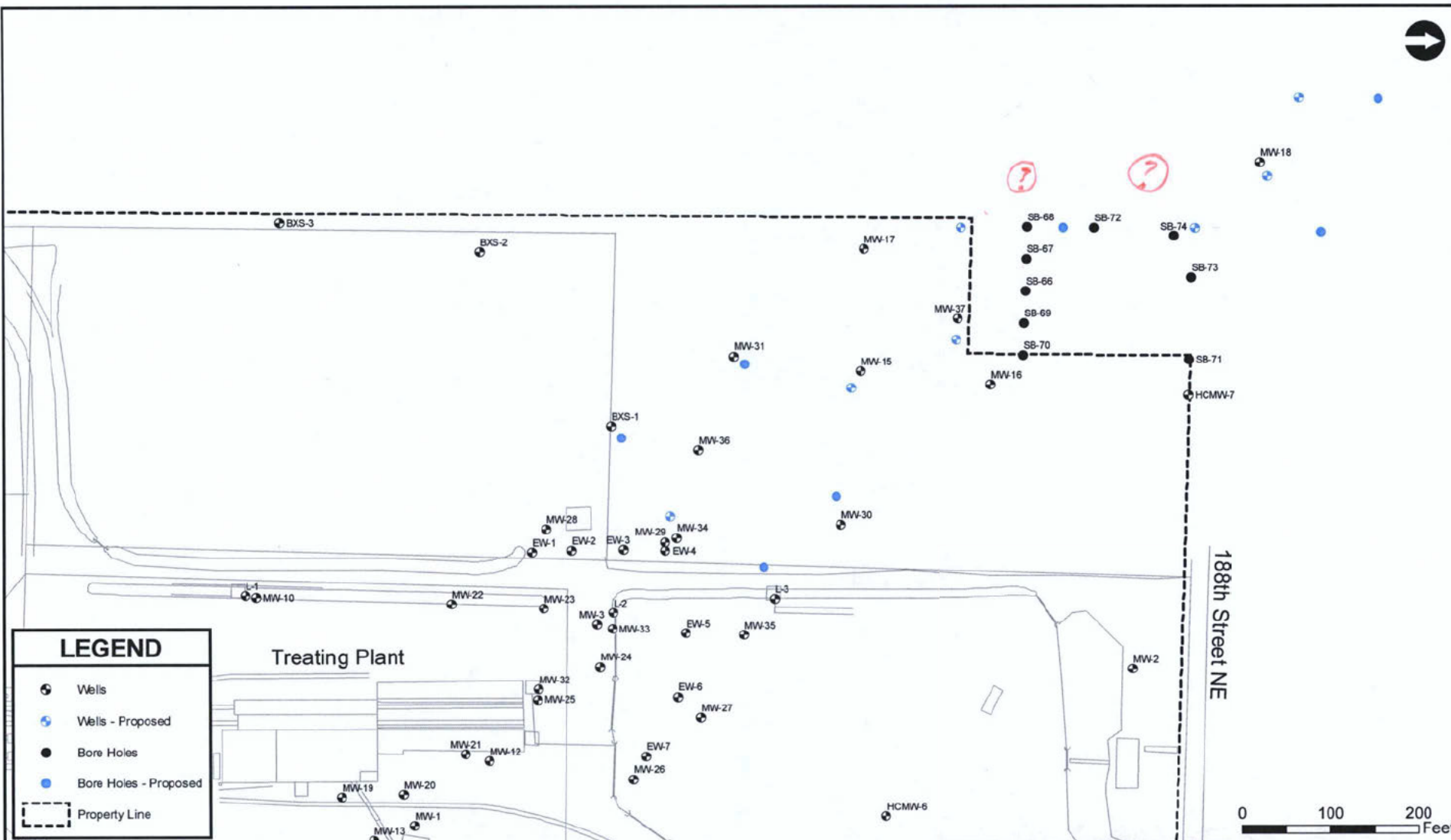


Figure 7 - Proposed Borehole and Well Locations: Phase II



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Appendix A

Technical Memorandum:
Supplemental Groundwater Investigation



APRIL 30, 2010
History
& Addendum

Technical Memorandum
J.H. Baxter and Co. Arlington Facility
Revised Supplemental Groundwater Investigation
April 30, 2010

This technical memorandum has been prepared to provide the analytical results and borehole logs for the Revised Supplemental Groundwater Investigation conducted at J.H. Baxter's Arlington, Washington facility (Figure 1). This investigation was conducted in accordance with the *Revised Supplemental Groundwater Investigation Work Plan* that was submitted to EPA on June 5, 2009, and approved by EPA on August 13, 2009. Fieldwork was conducted in December 2009, and is described in more detail below.

The investigation involved the collection of soil samples for lithologic classification and grab groundwater samples from nine boreholes (SB-66 to SB-74) located northwest of the Main Treating Area (Figure 2). The boreholes ranged in depth from 75 to 85 feet below ground surface (bgs). Four discrete grab groundwater samples were collected from each borehole approximately 10 feet (ft) apart over a 1-ft interval using a HydroPunch™ from each soil boring and analyzed for pentachlorophenol (PCP). Cascade Drilling Inc. of Woodinville, Washington conducted the drilling, and ALS Laboratories of Everett Washington conducted the laboratory analysis. Premier Environmental Services of Portland, Oregon provided drilling oversight and prepared the lithological logs. All field activities were completed between December 14 and December 23, 2009.

Deviations from the Work Plan approved by EPA included the increase in total depth for three of the nine boreholes (SB-70, SB-71, and SB-73) to account for preliminary analytical data that indicated that PCP concentrations were deeper than originally anticipated. In addition, a tenth borehole originally planned was not completed because of time constraints and scheduling issues.

Supplemental Groundwater Investigation – December 2009

Soil Borings SB-66 through SB-74

During this supplemental groundwater investigation, nine soil borings were installed northwest of the Main Treating Area using 6.25-inch diameter hollow-stem augers to depths ranging from 75 to 85 ft bgs



Technical Memorandum
J.H. Baxter and Co. Arlington Facility
Revised Supplemental Groundwater Investigation
April 30, 2010

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April 30, 2010

(Figures 2 and 3). Continuous soil samples were collected at each location using 1.5 ft-long, 2-inch diameter split spoon samplers. The hollow-stem augers were advanced using a CME hollow-stem auger drill rig operated by Cascade Drilling of Woodinville, WA. The drill rig also was used to collect the split-spoon samples using a 150-lb hammer with a 40-inch drop (blow counts were recorded for each 0.5 ft interval and are recorded on the attached soil boring logs SB-66 to SB-74).

Based on the borehole logs, the area is underlain by sand and gravel. A discontinuous silt to silty sand layer is present at depths between approximately 40 and 60 feet bgs. The silty layer was not present to the north in boreholes SB-73 and SB-74. Cross sections are presented in Figures 4 and 5. Borehole logs are presented in Attachment 1.

The groundwater samples were collected with a HydroPunch™, advanced approximately 1.0 ft with the drill rig in the selected sampling zone below the groundwater table then gently pulled back to open the disposable stainless steel screen interval. The HydroPunch™ was left open at the selected sampling interval until at least 75-100 percent full, then removed to fill the laboratory-supplied sampling containers (1-liter amber bottles). Four zones were selected in each boring, approximately 10 ft apart and starting with the first sampling interval just below the water table, ranging from 45 to 56 ft bgs, to the collection of the fourth discrete groundwater sample in each boring at depths ranging from 75 to 86 ft bgs. All groundwater samples were analyzed for PCP by EPA Method 8270. At a few select locations, two HydroPunch™ samples were collected to fill quality assurance/quality (QA/QC) control samples

Analytical results for groundwater samples are presented in Table A-1. Detected PCP concentrations in the shallow groundwater are shown on Figures 4, 5 and 6. PCP was detected in groundwater collected from each of the nine soil borings at concentrations ranging from 2 to 850 micrograms per liter (µg/L). Laboratory reports are provided in Attachment 3.

Quality Assurance/Quality Control Procedures and Sampling

The sampling equipment and supplies were decontaminated in accordance with the protocols described in the 2002 *Site Investigation Work Plan*. At each boring, the sampling equipment was decontaminated between sampling intervals with a soapy water wash, tap water rinse, and then a final de-ionized water rinse (laboratory grade, supplied by ALS laboratory). A new disposable stainless steel screen, rubber band, and new carbon steel tip was used in the HydroPunch™ at each sample interval. Sampling personnel collected groundwater samples with new disposable latex gloves at each interval. Groundwater collected from each interval was immediately poured into the laboratory supplied 1-liter amber bottle and placed in a cooler with ice. The samples were appropriately packed for shipment and a chain-of-custody (COC) form completed and signed by the ALS lab courier who picked up the samples

each evening for delivery to their laboratory in Everett, WA. Between each soil boring location, the hollow-stem augers, drill rods and HydroPunch™ was decontaminated using a hot water pressure washer.

Two blind duplicate and two rinsate samples were collected during the supplemental groundwater investigation. The blind duplicate samples were collected by pouring the groundwater collected in HydroPunch™ equally between the regular sample and QA/QC sample. The equipment rinsate samples were collected on the decontaminated HydroPunch™ by pouring de-ionized water into the sampling container and then into the 1-liter amber bottle. The analytical results are presented on Table A-1.

Quality Assurance Review

QA/QC review and data validation were conducted to confirm that all collected data complied with analytical methods and control limits as defined in the *Sampling and Analysis and Data Management Plan* (SADMP; Appendix B of the *Remedial Investigation Work Plan*). Guidance for the data validation was obtained from QA/R-5, *EPA Requirements for Quality Assurance Project Plans* and QA/G-5, *EPA Guidance for Quality Assurance Project Plans*. Quality assurance review of the organic and conventional data was performed using QA/G-8, *EPA Guidance on Environmental Data Verification and Data Validation* and EPA's functional guidelines in the context of data quality objectives specified in the SADMP. A data validation reports was prepared to document QA/QC procedures and results and can be found as Attachment 2.

Appendix A Figures

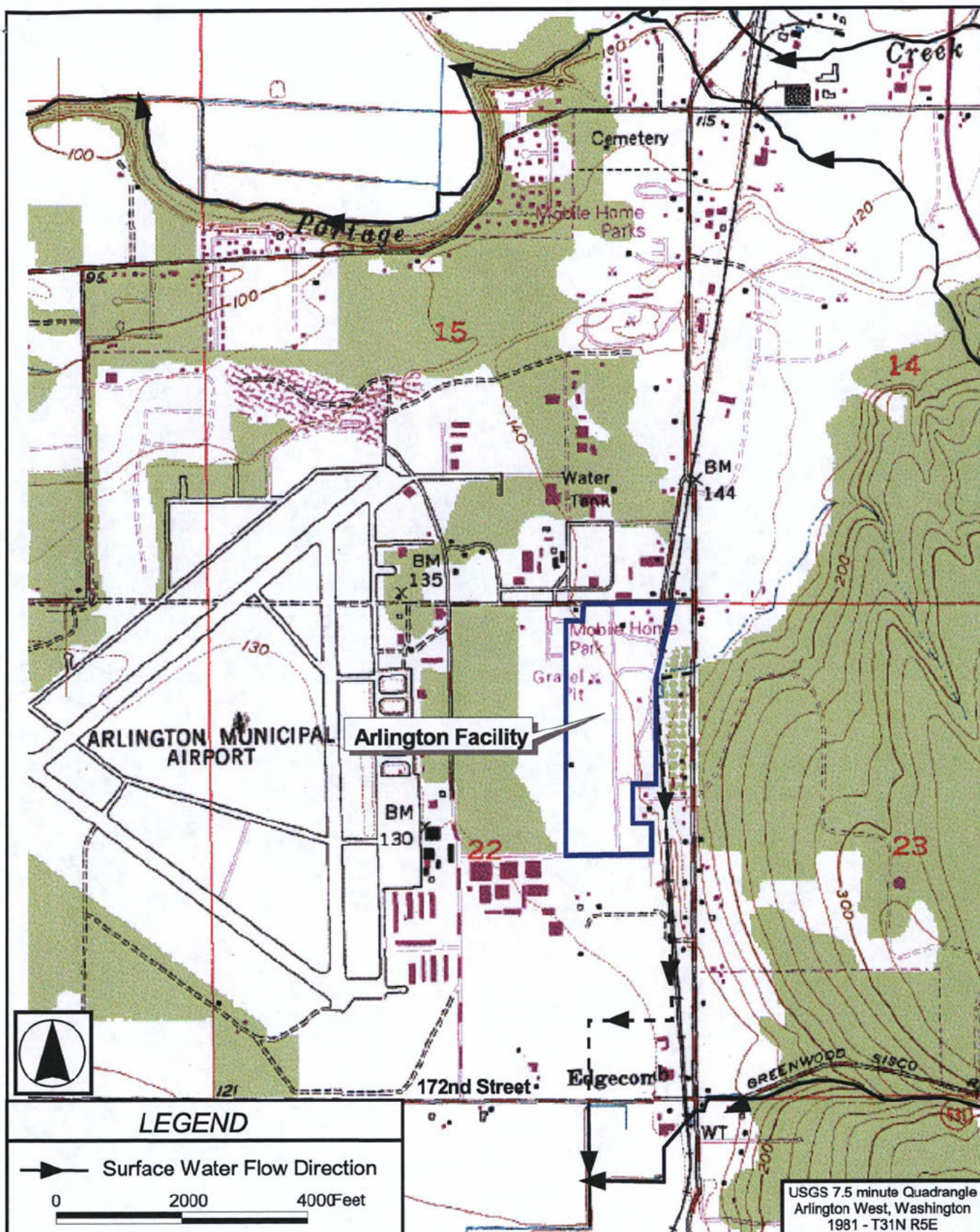
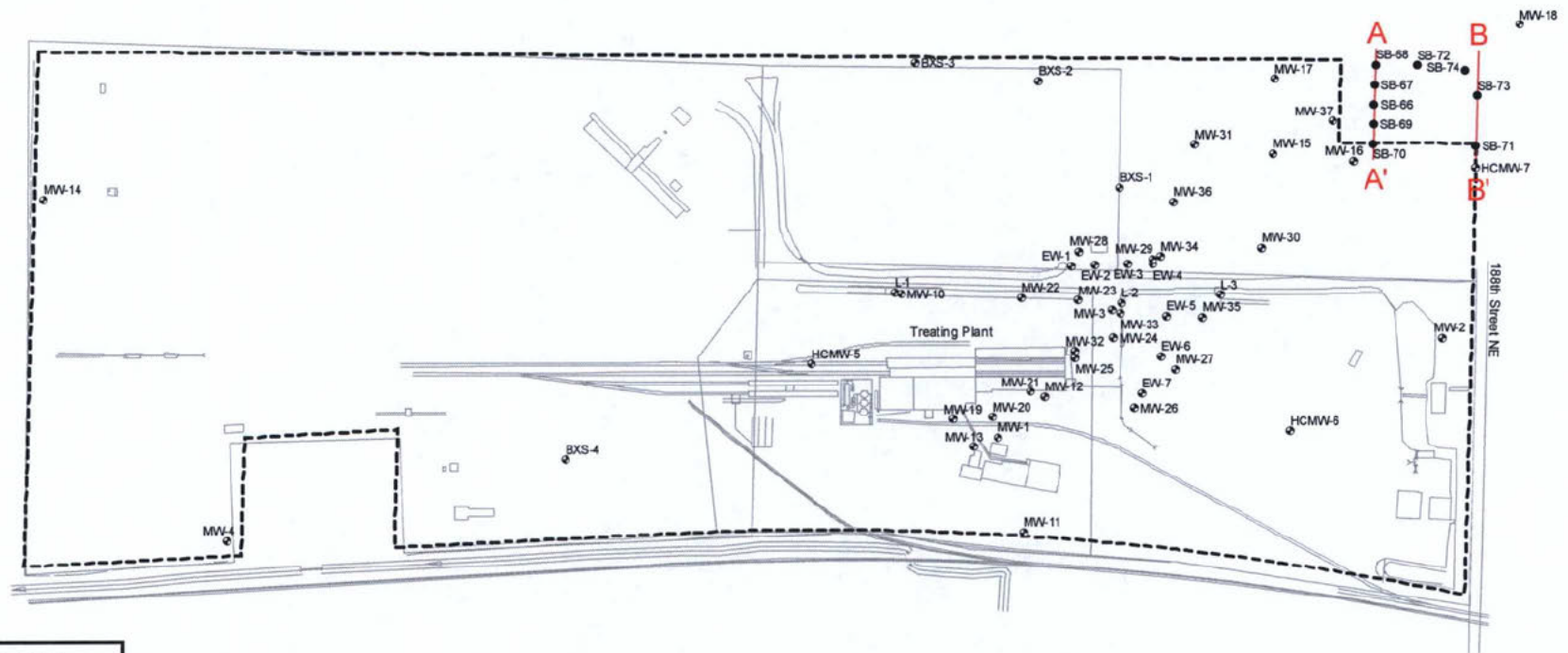


Figure 1. Site Vicinity

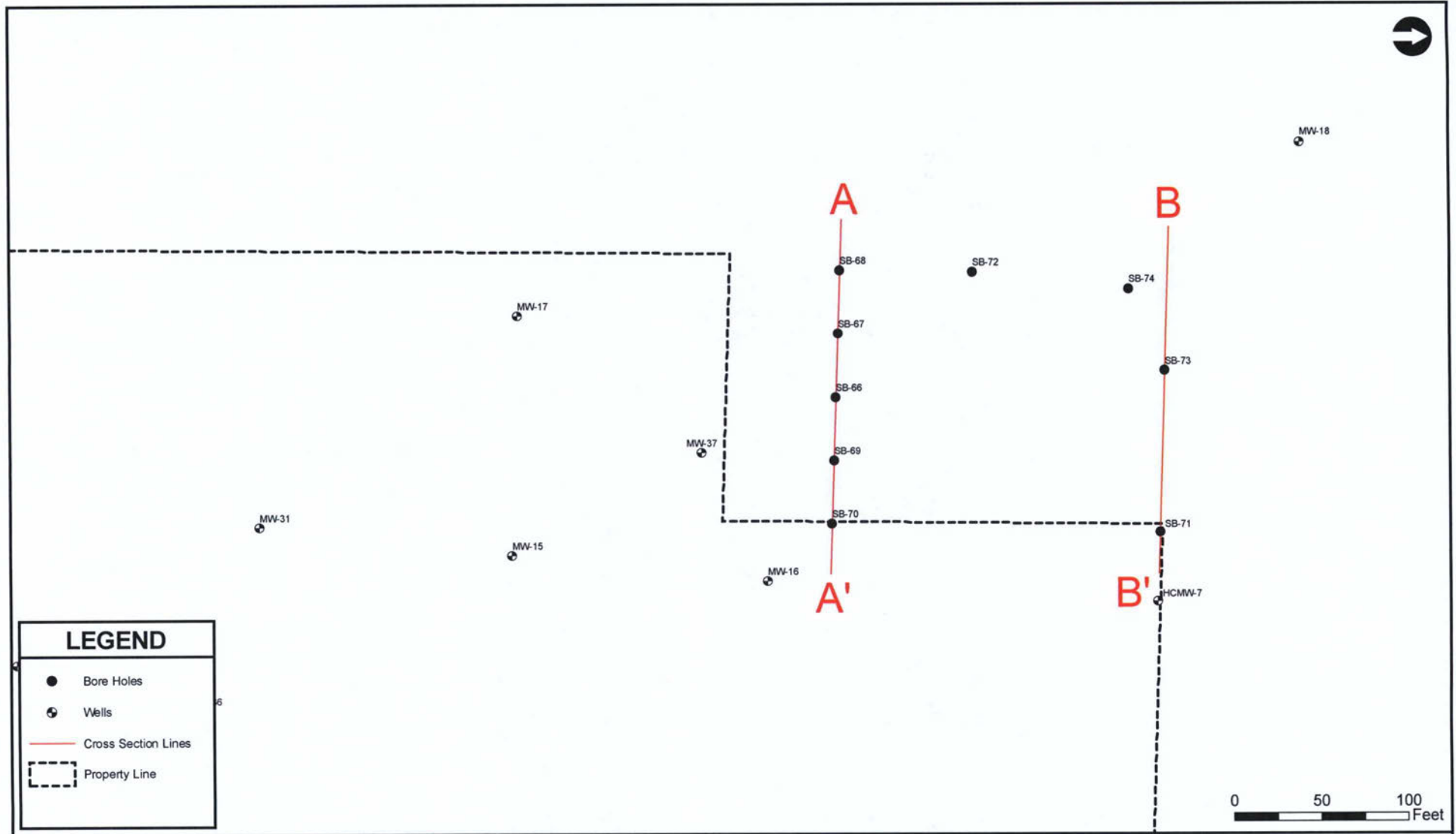


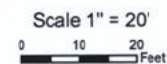
LEGEND

- Bore Holes
- ◐ Wells
- Cross Section Lines
- - - Property Line

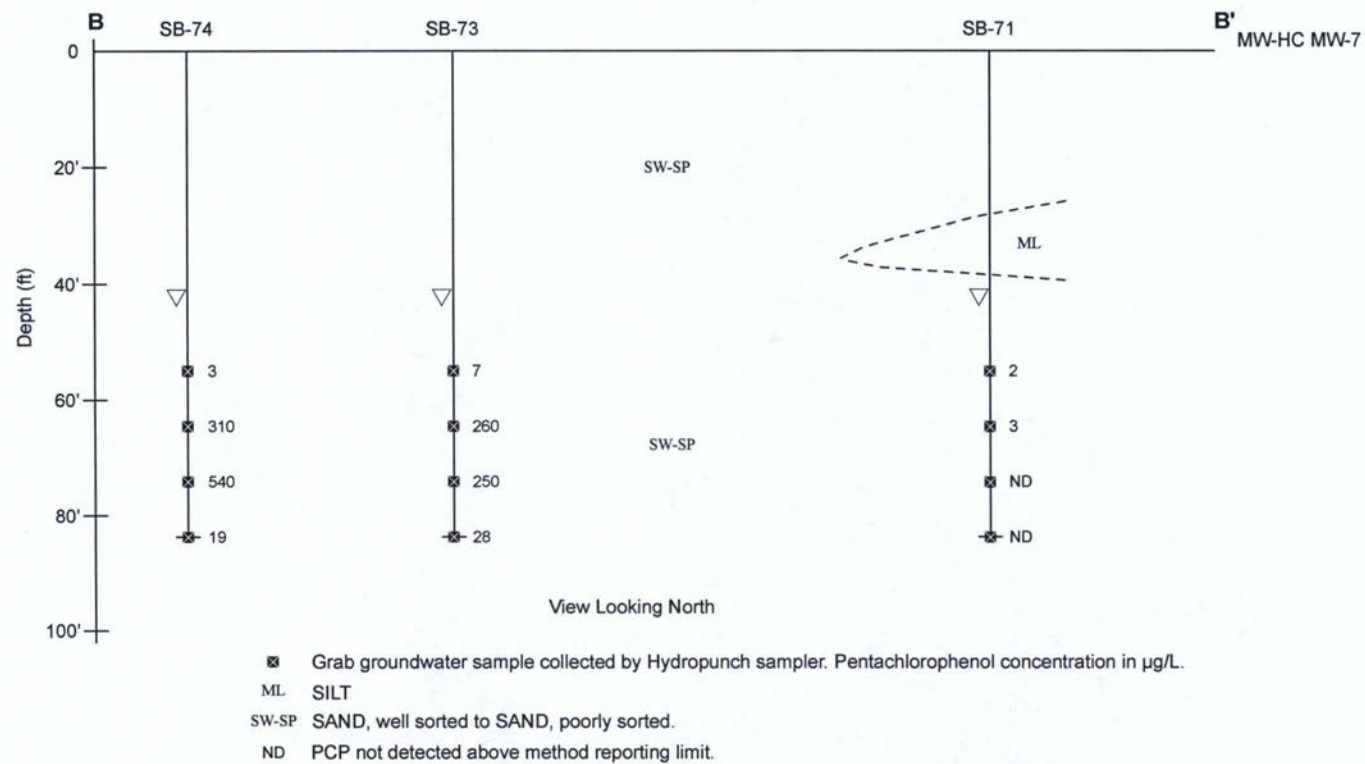
0 200 400 Feet

Figure 2 - Well and Borehole Location Map





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Scale 1" = 20'
 0 10 20 Feet

Figure 5 - Cross Section B'-B

SB-66		SB-67		SB-68		SB-69		SB-70		SB-71		SB-72		SB-73		SB-74	
Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)
50	0.5	50 and 55	2.5	45	1.0	45	3.0	45	5.4	55	2.3	55	2.3	55	6.7	55	2.4
60	1.6	62	1.7	55	1.0	55	2.2	55	2.5	65	2.6	65	2.6	65	260	65	310
68.5	300	70	2.1	65	1.0	65	850	65	3.4	75	1.0	74	7.9	75	250	75	540
80	320	79	2.3	75	220	75	110	75	1.0	85	1.0	65	2.0	85	28	85	19

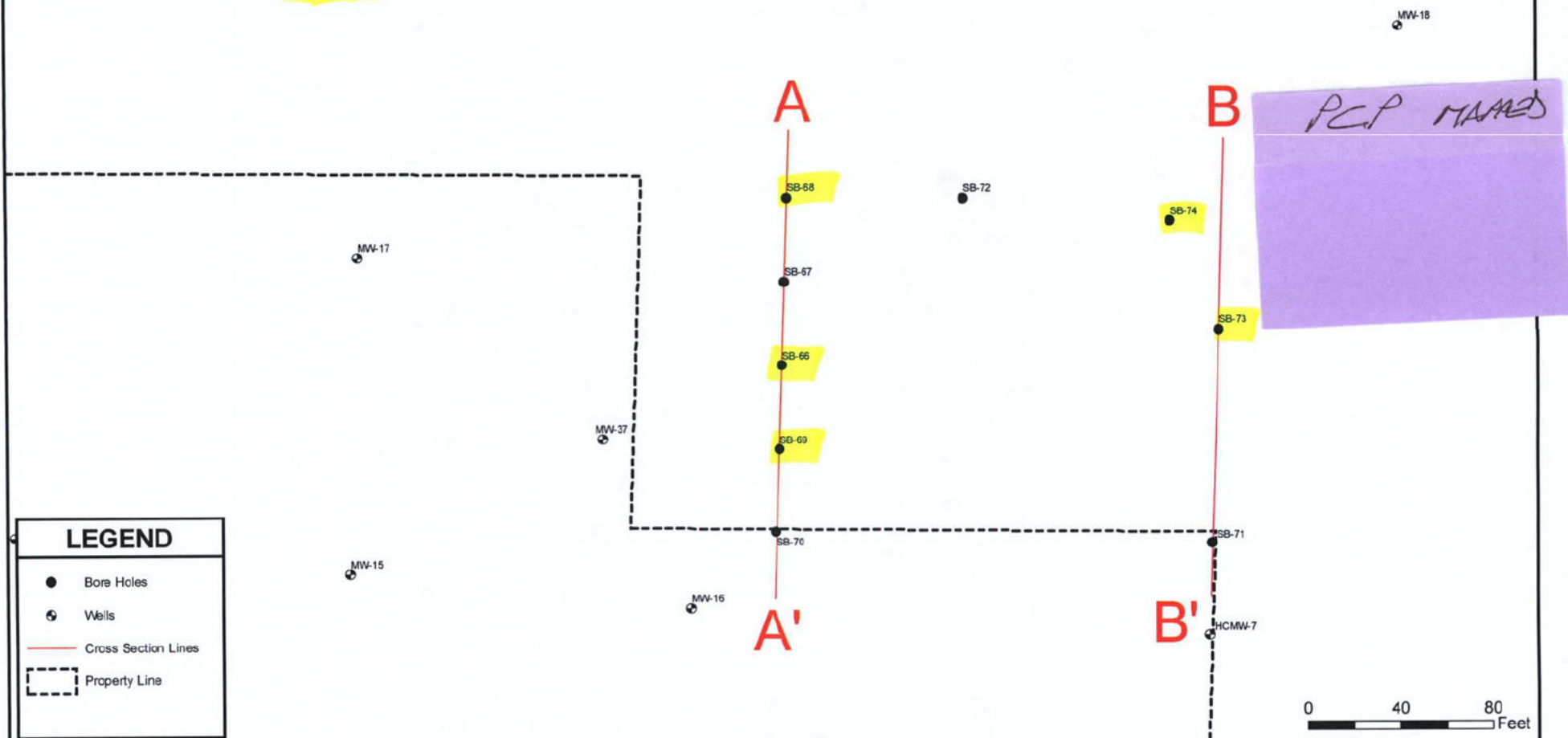


Figure 6 - Pentachlorophenol in Groundwater

SB-66		SB-67		SB-68		SB-69		SB-70		SB-71		SB-72		SB-73		SB-74	
Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)	Depth (ft)	PCP (ug/L)
50	0.5	50 and 55	2.5	45	1.0	45	3.0	45	5.4	55	2.3	55	2.3	55	6.7	55	2.4
60	1.6	62	1.7	55	1.0	55	2.2	55	2.5	65	2.6	65	2.6	65	260	65	310
68.5	300	70	2.1	65	1.0	65	850	65	3.4	75	1.0	74	7.9	75	250	75	540
80	320	79	2.3	75	220	75	110	75	1.0	85	1.0	65	2.0	85	28	85	19

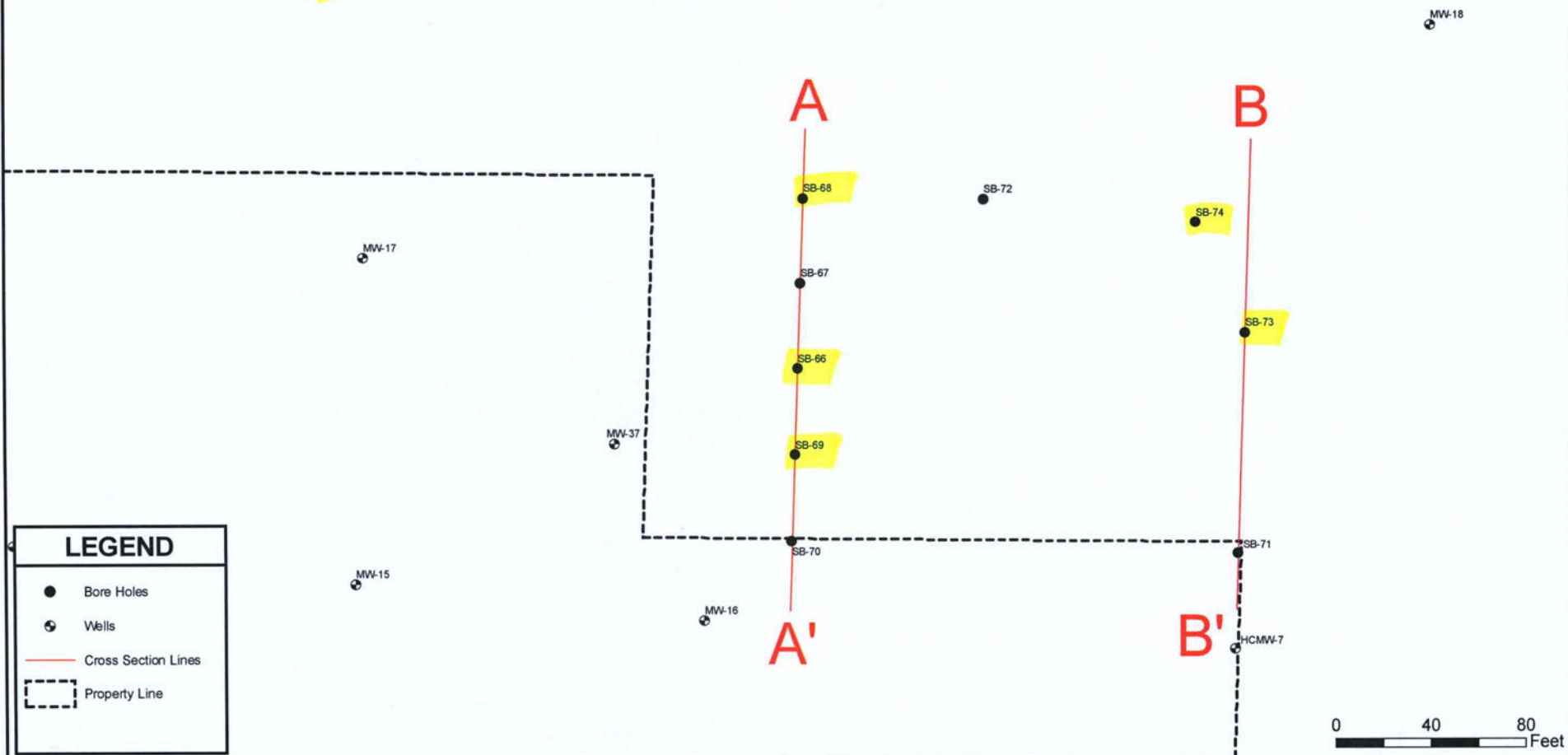

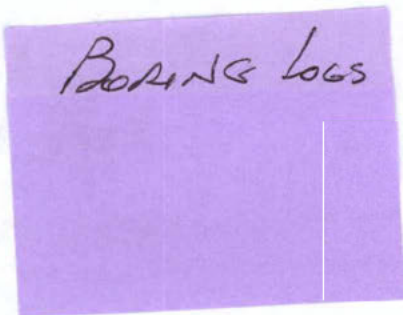


Figure 6 - Pentachlorophenol in Groundwater

Attachment 1

Borehole Logs

Client: J.H. Baxter	Location: Arlington, WA	PAGE 1 of 2
Logged By: Derek McGregor	Date Drilled: December 14, 2009	 <p>Premier ENVIRONMENTAL SERVICES INC.</p> <p>Project Name: J.H. Baxter - Supplemental Groundwater Project No: 209066.00 Task 2</p>
Driller: Cascade Drilling	Borehole Diameter: 6 inch	
Drilling Method: HSA	Borehole Depth: 80 feet	
Sampling Method: Hydropunch	Well Diameter: n/a	
Casing Type: n/a	Well Depth: n/a	
Slot Size: n/a	Casing Stickup: n/a	
Gravel Pack: n/a	Water Table: ~40 feet bls	

Boring SB-66					Elevation (feet msl) ~140		Northing (feet) n/a		Easting (feet) n/a	
Boring Completion	Water Level	Moisture Content	Groundwater Sample Interval	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION	
Backfill						Recovery	Interval			
Cement Plug		moist		10,12,14	2			SW	SAND AND GRAVEL: brown, subangular to subrounded, poorly sorted 	
					4					
		moist		16,20,22	6					
					8					
					10					
		moist			12					
					14					
					16					
					18					
		moist		12,23,30	20					
					22					
					24					
		moist		14,20,27	26			SP	SAND: brown, medium to coarse, subangular, well sorted	
					28					
					30					
					32					
					34					
		moist		17,21,30	36			SW	SAND: brown, medium to coarse, subangular, moderate sorted; Little Gravel, subrounded	
					38					
	▽	wet		50+	40			SP	SAND: brown, fine to medium sand, well sorted	
					42					
					44					

Location: Arlington, WA
Date Drilled: December 14, 2009
Borehole Diameter: 6 inch
Borehole Depth: 80 feet
Well Diameter: n/a
Well Depth: n/a
Casing Stickup: n/a
Water Table: ~40 feet bls



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**Project Name: J.H. Baxter -
Supplemental Groundwater
Project No: 209066.00 Task 2**

Boring SB-66					Elevation (feet msl) ~140		Northing (feet) n/a		Easting (feet) n/a	
Boring Completion	Water Level	Moisture Content	Groundwater Sample Interval	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION	
Backfill						Recovery	Interval			
<div>Cement Plug</div> <div>Bentonite Collar</div>					2			SP	SAND AND GRAVEL: brown, subangular to subrounded, poorly sorted	
					4					
		moist		10,12,14	6					
					8					
		moist		16,20,22	10					
					12					
					14			SP	SAND: brown, medium to coarse, subangular, well sorted	
					16					
					18					
		moist		12,23,30	20					
					22					
					24					
		moist		14,20,27	26			SP	SAND: brown, medium to coarse, subangular, moderate sorted; Little Gravel, subrounded	
					28					
					30					
					32					
					34					
		moist		17,21,30	36					
				38			SP	SAND: brown, fine to medium sand, well sorted		
				40						
	wet		50+	42						
				44						


Client: J.H. Baxter
 Logged By: Derek McGregor
 Driller: Cascade Drilling
 Drilling Method: HSA
 Sampling Method: Hydropunch
 Casing Type: n/a
 Slot Size: n/a
 Gravel Pack: n/a

Location: Arlington, WA
 Date Drilled: December 14, 2009
 Borehole Diameter: 6 inch
 Borehole Depth: 80 feet
 Well Diameter: n/a
 Well Depth: n/a
 Casing Stickup: n/a
 Water Table: ~40 feet bls



**Project Name: J.H. Baxter -
 Supplemental Groundwater
 Project No: 209066.00 Task 2**

Boring SB-66 (cont.)						Elevation (feet msl) ~140		Northing (feet) n/a	Easting (feet) n/a	
Boring Completion	Water Level	Moisture Content	Vapor Concentration (ppm)	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION	
Backfill						Recovery	Interval			
	wet			10,19,24	46			SP	SAND: brown, fine to medium sand, well sorted	
					48			SM	SAND: brown, very fine to fine; Little Silt, well sorted	
					50				@ 50-51 feet Hydropunch, wait 45 minutes, collected GW-66-1	
					52					
	wet			8,23,27	54					
					56			SP	SAND: brown, very fine to medium, well sorted	
					58					
					60				@ 60-61 feet Hydropunch, wait 40 minutes, collected GW-66-2	
	wet			7,21,27	62					
					64					
					66			SW	SAND: brown, fine to coarse; Trace Gravel, well sorted	
					68				@ 68.5-69.5 feet Hydropunch, wait 30 minutes, heaving sands, could not get to 70 feet bgs, collected GW-66-3	
	wet			8,16,23	70					
					72					
					74					
					76			SP	SAND: brown, fine to medium, well sorted	
					78				@ 80-81 feet Hydropunch, wait 45 minutes, collected GW-66-4	
					80				Boring terminated at 80 feet and backfilled with bentonite chips and capped with cement	

Client: J.H. Baxter	Location: Arlington, WA	PAGE 1 of 2
Logged By: Derek McGregor	Date Drilled: December 15, 2009	 Project Name: J.H. Baxter - Supplemental Groundwater Project No: 209066.00 Task 2
Driller: Cascade Drilling	Borehole Diameter: 6 inch	
Drilling Method: HSA	Borehole Depth: 80 feet	
Sampling Method: Hydropunch	Well Diameter: n/a	
Casing Type: n/a	Well Depth: n/a	
Slot Size: n/a	Casing Stickup: n/a	
Gravel Pack: n/a	Water Table: ~42 feet bls	



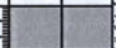





Boring SB-67						Elevation (feet msl)		Northing (feet)	Easting (feet)
						~140		n/a	n/a
Boring Completion	Water Level	Moisture Content	Groundwater Sample Interval	Blow Counts	Depth (feet)	Sample		LITHOLOGY / DESCRIPTION	
Backfill						Recovery	Interval		
Cement Plug					2			SW SAND AND GRAVEL: brown, fine to coarse; Little Gravel, subangular to subrounded, poorly sorted	
					4				
	moist		9,10,12		6				
					8				
	moist		16,18,20		10				
					12			SP SAND: brown, very fine to coarse, subangular, well sorted	
					14				
	moist		15,20,24		16				
					18				
	moist		5,14,19		20				
Bentonite Chips					22			SW SAND: brown, subangular, very fine to coarse; Trace Gravel, subangular, well sorted	
					24				
	moist		19,20,23		26				
					28				
	moist		15,22,22		30				
					32			ML SILT: brown; Little Clay; Some Sand, very fine to fine, low plasticity	
					34				
	moist		13,18,22		36				
					38				
	wet		18,23,25		40				
					42				
					44				


Client: J.H. Baxter
 Logged By: Derek McGregor
 Driller: Cascade Drilling
 Drilling Method: HSA
 Sampling Method: Hydropunch
 Casing Type: n/a
 Slot Size: n/a
 Gravel Pack: n/a

Location: Arlington, WA
 Date Drilled: December 15, 2009
 Borehole Diameter: 6 inch
 Borehole Depth: 80 feet
 Well Diameter: n/a
 Well Depth: n/a
 Casing Stickup: n/a
 Water Table: ~42 feet bls



**Project Name: J.H. Baxter -
 Supplemental Groundwater
 Project No: 209066.00 Task 2**

Boring SB-67 (cont.)					Elevation (feet msl) ~140		Northing (feet) n/a		Easting (feet) n/a		
Boring Completion	Water Level	Moisture Content	Vapor Concentration (ppm)	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION		
Backfill						Recovery	Interval				
	wet			10,16,20	46			ML	SILT: brown; Some Sand, very fine to fine, well sorted @ 50-51 feet Hydropunch, wait 84 minutes, only about 100 ml of water, go to 55 feet and try again, screen had fine sand and silt on it @ 55-56 feet wait 47 minutes, collected GW-67-1		
					48						
					50						
					52						
					54						
					56						
					58						
					60						
	wet			5,8,7	62			SP	SAND: brown, very fine to fine, well sorted @ 62-63 feet Hydropunch, wait 45 minutes, collected GW-67-2		
					64						
					66						
					68						
	wet			13,19,30	70				@ 70-71 feet Hydropunch, wait 30 minutes, collected GW-67-3		
					72						
					74						
					76						
	wet			4,10,24	78			SW	GRAVEL: brown, fine to medium, subrounded; Some Sand, medium to coarse, subangular, well sorted @ 79-80 feet Hydropunch, wait 47 minutes, collected GW-66-4, collected duplicate 1 at this depth		
					80						
										Boring terminated at 80 feet and backfilled with bentonite chips and capped with cement	

Client: J.H. Baxter				Location: Arlington, WA				PAGE 1 of 2			
Logged By: Derek McGregor				Date Drilled: December 15 & 16, 2009				<div> Project Name: J.H. Baxter - Supplemental Groundwater Project No: 209066.00 Task 2</div>			
Driller: Cascade Drilling				Borehole Diameter: 6 inch							
Drilling Method: HSA				Borehole Depth: 75 feet							
Sampling Method: Hydropunch				Well Diameter: n/a							
Casing Type: n/a				Well Depth: n/a							
Slot Size: n/a				Casing Stickup: n/a				<div>Boring SB-68</div>			
Gravel Pack: n/a				Water Table: ~38 feet bls							
				Elevation (feet msl) ~140				Northing (feet) n/a		Easting (feet) n/a	
Boring Completion	Water Level	Moisture Content	Groundwater Sample Interval	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION		
Backfill						Recovery	Interval				
Cement Plug	▽	moist		12,18,22	2			SW	SAND AND GRAVEL: brown; Trace Cobbles, subangular to subrounded, moderately sorted		
					4						
					6						
					8						
					10						
					12						
					14						
					16						
					18						
					20						
Bentonite Chips	▽	moist	27, 55+	10,11,13	22			SP	SAND: brown, fine to coarse; Trace Gravel, subangular, well sorted		
					24						
					26						
					28						
					30						
					32						
					34						
					36						
					38						
					40						
	▽	wet	15,19,20	13,16,24	42			SW	SAND AND GRAVEL: brown, medium to very coarse Sand, fine to medium Gravel, subangular to subrounded, moderately sorted		
					44						


Location: Arlington, WA
Date Drilled: December 15 & 16, 2009
Borehole Diameter: 6 inch
Borehole Depth: 75 feet
Well Diameter: n/a
Well Depth: n/a
Casing Stickup: n/a
Water Table: ~38 feet bls




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**Project Name: J.H. Baxter -
Supplemental Groundwater
Project No: 209066.00 Task 2**

Boring SB-68 (cont.)						Elevation (feet msl) ~140		Northing (feet) n/a		Easting (feet) n/a	
Boring Completion	Water Level	Moisture Content	Vapor Concentration (ppm)	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION		
Backfill						Recovery	Interval				
<div>Bentonite Chips</div>			<div></div>		46			SW	@ 45 feet Hydropunch, wait 35 minutes, collected GW-68-1		
					48						
		wet		13,17,17	50			ML	SILT: brown; Trace Clay, low plasticity; Trace Sand, very fine, soft		
					52						
			<div></div>		54						
			<div></div>		56				@ 55-56 feet Hydropunch, wait 52 minutes, collected GW-68-2		
					58						
		wet		50+	60			SP	SAND: brown, fine to medium, subangular, well sorted		
					62						
			<div></div>		64				@ 65 feet Hydropunch, wait 30 minutes, collected GW-68-3		
				66							
				68							
	wet		50+	70					@ 75 feet Hydropunch, wait 40 minutes, collected GW-68-4		
				72							
			<div></div>		74				@ 75 feet Hydropunch, wait 40 minutes, collected GW-68-4		
									Boring terminated at 75 feet and backfilled with bentonite chips and capped with cement		

Client: J.H. Baxter			Location: Arlington, WA			PAGE 1 of 2						
Logged By: Derek McGregor			Date Drilled: December 16 & 17, 2009			<div></div> Project Name: J.H. Baxter - Supplemental Groundwater Project No: 209066.00 Task 2						
Driller: Cascade Drilling			Borehole Diameter: 6 inch									
Drilling Method: HSA			Borehole Depth: 75 feet									
Sampling Method: Hydropunch			Well Diameter: n/a									
Casing Type: n/a			Well Depth: n/a									
Slot Size: n/a			Casing Stickup: n/a			Elevation (feet msl)						
Gravel Pack: n/a			Water Table: ~37 feet bls			Northing (feet)						
						Easting (feet)						
						n/a						
Boring SB-69						Elevation (feet msl) ~140			Northing (feet) n/a		Easting (feet) n/a	
Boring Completion		Water Level	Moisture Content	Groundwater Sample Interval	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION		
Backfill							Recovery	Interval				
Cement Plug			moist		7,10,11	2			SW	SAND AND GRAVEL: brown, fine to coarse Sand; Trace Gravel, fine to coarse, subangular to subrounded, moderately sorted		
						4						
			moist		18,20,21	6						
						8						
			moist		15,17,26	10						
						12						
			moist		13,20,20	14				same as above, except little Gravel		
						16						
			moist		17,22,26	18						
						20				trace Gravel, coarse, subrounded		
						22						
			moist		17,22,26	24						
						26			SP	SAND: brown, fine to coarse, subangular, well sorted		
						28						
			moist		17,24,32	30				same as above except little Gravel, fine to coarse, subrounded		
						32						
						34						
		▽	moist		13,21,27	36			SW	SAND: brown, fine to coarse, subangular; Some Gravel, fine to coarse, subrounded, moderately sorted		
						38						
			wet		50+	40						
						42			SP	SAND: brown, fine to coarse; Medium Cobble blocked end of split spoon		
						44						

Client: J.H. Baxter Logged By: Derek McGregor Driller: Cascade Drilling Drilling Method: HSA Sampling Method: Hydropunch Casing Type: n/a Slot Size: n/a Gravel Pack: n/a	Location: Arlington, WA Date Drilled: December 16 & 17, 2009 Borehole Diameter: 6 inch Borehole Depth: 75 feet Well Diameter: n/a Well Depth: n/a Casing Stickup: n/a Water Table: ~37 feet bls	PAGE 2 of 2  Project Name: J.H. Baxter - Supplemental Groundwater Project No: 209066.00 Task 2
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Boring SB-69 (cont.)					Elevation (feet msl) ~140		Northing (feet) n/a		Easting (feet) n/a	
Boring Completion	Water Level	Moisture Content	Vapor Concentration (ppm)	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION	
Backfill						Recovery	Interval			
<div></div>			<div></div>		46				@ 45-46 feet Hydropunch, left overnight 900 minutes, collected GW-69-1	
					48					
		wet		19,50+	50			SP	SAND: brown, fine to medium, subangular, well sorted	
					52					
					54					
			<div></div>		56				@ 55-56 feet Hydropunch, wait 62 minutes, collected GW-69-2	
					58					
		wet		18,21,25	60			SW	GRAVEL: brown, fine to medium, subangular; Some Sand, fine to coarse, subangular, well sorted	
					62					
					64					
			<div></div>		66				@ 65-66 feet Hydropunch, wait 35 minutes, collected GW-69-3	
					68					
				3,5,7	70				@70-71.5 no recovery	
					72					
					74				@ 75-76 feet Hydropunch, wait 35 minutes, collected GW-69-4	
		<div></div>						Boring terminated at 75 feet and backfilled with bentonite chips and capped with cement		

Client: J.H. Baxter
 Logged By: Derek McGregor
 Driller: Cascade Drilling
 Drilling Method: HSA
 Sampling Method: Hydropunch
 Casing Type: n/a
 Slot Size: n/a
 Gravel Pack: n/a

Location: Arlington, WA
 Date Drilled: December 17, 2009
 Borehole Diameter: 6 inch
 Borehole Depth: 75 feet
 Well Diameter: n/a
 Well Depth: n/a
 Casing Stickup: n/a
 Water Table: ~38 feet bls

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Project Name: J.H. Baxter -
 Supplemental Groundwater
 Project No: 209066.00 Task 2

Boring SB-70						Elevation (feet msl) ~140		Northing (feet) n/a	Easting (feet) n/a
Boring Completion	Water Level	Moisture Content	Groundwater Sample Interval	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION
Backfill						Recovery	Interval		
Cement Plug					2			SW	SAND: brown, fine to coarse, subangular; Little Gravel, fine to coarse, subrounded
		moist		7,13,14	4				
		moist		20,21,22	6				same as above, trace Cobbles
		moist		14,18,19	8				
		moist		35,50+	10				tip blocked by cobbles
		moist		32,50+	12				
		moist		21,32,38	14				moderately sorted
		moist		50+	16				little Cobbles, rounded
	▽	wet		16,19,20	18			ML	SILT: brown; Little Clay, low plasticity, moist, stiff
					20				
					22				
					24				
					26				
					28				
					30				
					32				
					34				
					36				
					38				
					40				
					42				
					44				

Client: J.H. Baxter
 Logged By: Derek McGregor
 Driller: Cascade Drilling
 Drilling Method: HSA
 Sampling Method: Hydropunch
 Casing Type: n/a
 Slot Size: n/a
 Gravel Pack: n/a

Location: Arlington, WA
 Date Drilled: December 17, 2009
 Borehole Diameter: 6 inch
 Borehole Depth: 75 feet
 Well Diameter: n/a
 Well Depth: n/a
 Casing Stickup: n/a
 Water Table: ~38 feet bis

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**Project Name: J.H. Baxter -
 Supplemental Groundwater
 Project No: 209066.00 Task 2**

Boring SB-70 (cont.)						Elevation (feet msl) ~140		Northing (feet) n/a	Easting (feet) n/a
Boring Completion	Water Level	Moisture Content	Vapor Concentration (ppm)	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION
Backfill						Recovery	Interval		
	wet			18,17,22	46			ML	SILT: brown; Trace Clay, low plasticity, moist, stiff @ 45-46 feet Hydropunch, wait 35 minutes, collected GW-70-1
					48				
					50				
					52			SP	SAND: brown, very fine to fine, subangular, well sorted
					54				
					56				@ 55-56 feet Hydropunch, wait 52 minutes, collected GW-70-2
					58				
					60			SW	SAND: brown, fine to very coarse, subangular; Trace Gravel, fine, well sorted
	wet			5,7,6	62				
					64				
					66				@ 65-66 feet Hydropunch, wait 90 minutes, collected GW-70-3
					68				
					70				
					72			SP	SAND: brown, very fine to fine, subangular, well sorted
					74				@ 75-76 feet Hydropunch, wait 40 minutes, collected GW-70-4
									Boring terminated at 75 feet and backfilled with bentonite chips and capped with cement

Client: J.H. Baxter	Location: Arlington, WA	PAGE 1 of 2
Logged By: Derek McGregor	Date Drilled: December 17 & 19, 2009	
Driller: Cascade Drilling	Borehole Diameter: 6 inch	
Drilling Method: HSA	Borehole Depth: 85 feet	
Sampling Method: Hydropunch	Well Diameter: n/a	
Casing Type: n/a	Well Depth: n/a	
Slot Size: n/a	Casing Stickup: n/a	
Gravel Pack: n/a	Water Table: ~42 feet bls	



**Project Name: J.H. Baxter -
Supplemental Groundwater
Project No: 209066.00 Task 2**

Boring SB-71						Elevation (feet msl) ~140		Northing (feet) n/a	Easting (feet) n/a
Boring Completion	Water Level	Moisture Content	Groundwater Sample Interval	Blow Counts	Depth (feet)	Sample		LITHOLOGY / DESCRIPTION	
Backfill						Recovery	Interval		
Cement Plug					2			SW	SAND: brown, fine to coarse, subangular, moderately sorted; Trace Gravel, fine to medium, rounded
					4				
Bentonite Chips		moist		10,12,13	6			SW	same as above, trace Cobbles
					8				
		moist		8,13,15	10				
					12				
					14				
		moist		16,18,21	16				
					18				
					20				
		moist		14,17,17	22				
					24				
		moist		14,20,21	26				
					28				
		moist		15,22,24	30				
					32				
					34				
		moist		17,20,23	36				
					38				
					40				
		very moist		13,15,21	42				
					44				
								ML	SILT: brown; Little Clay, low plasticity, medium stiff
								SP	SAND: brown, very fine to fine, subangular, well sorted

Client: J.H. Baxter
 Logged By: Derek McGregor
 Driller: Cascade Drilling
 Drilling Method: HSA
 Sampling Method: Hydropunch
 Casing Type: n/a
 Slot Size: n/a
 Gravel Pack: n/a

Location: Arlington, WA
 Date Drilled: December 17 & 19, 2009
 Borehole Diameter: 6 inch
 Borehole Depth: 85 feet
 Well Diameter: n/a
 Well Depth: n/a
 Casing Stickup: n/a
 Water Table: ~42 feet bls


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**Project Name: J.H. Baxter -
 Supplemental Groundwater
 Project No: 209066.00 Task 2**


Boring SB-71 (cont.)						Elevation (feet msl) ~140		Northing (feet) n/a	Easting (feet) n/a
Boring Completion	Water Level	Moisture Content	Vapor Concentration (ppm)	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION
Backfill						Recovery	Interval		
	very moist			7,11,15	46			SP	SAND: brown, very fine to fine, subangular, well sorted
					48				
					50				
					52			SW	SAND: brown, fine to very coarse; Trace Gravel, fine, subangular, well sorted
	wet			19,50+	54				@ 55-56 feet Hydropunch, first wait 30-40 minutes, second 25-45 minutes (sample twice to get enough water), collected GW-71-1
					56				
					58				
					60				
					62				
					64				
					66				@ 65-66 feet Hydropunch, wait 45 minutes, collected GW-71-2
					68				
	wet			3,5,10	70			SP	SAND: brown, very fine to medium, subangular, well sorted
					72				
					74				
					76				@ 75-76 feet Hydropunch, wait 45 minutes, collected GW-71-3
	wet				78				
					80				
					82				@ 85-86 feet Hydropunch, wait 45 minutes, collected GW-71-4
					84				
									Boring terminated at 85 feet and backfilled with bentonite chips and capped with cement

Location: Arlington, WA
Date Drilled: December 22 & 23 2009
Borehole Diameter: 6 inch
Borehole Depth: 85 feet
Well Diameter: n/a
Well Depth: n/a
Casing Stickup: n/a
Water Table: ~42 feet bls


**Project Name: J.H. Baxter -
Supplemental Groundwater**
Project No: 209066.00 Task 2

Boring SB-72					Elevation (feet msl) ~140		Northing (feet) n/a		Easting (feet) n/a	
Boring Completion		Water Level	Moisture Content	Groundwater Sample Interval	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION
Backfill							Recovery	Interval		
<div>Cement Plug</div> <div>Bentonite Chips</div>						2			SW	SAND: brown, fine to coarse, subangular; Some Gravel, fine to coarse, subrounded, poorly sorted
						4				
		moist		11,14,18	6					
					8					
		moist		15,16,20	10					same as above, trace Cobbles
					12					
					14					
		moist		8,15,19	16					silt layer in middle
					18					
		moist		10,18,19	20					Sand: brown, fine to coarse, subangular, soft, non plasticity; Trace Gravel, fine to medium, subrounded; Trace Cobbles, poorly sorted
					22					
					24					
		moist		17,21,23	26				SP	SAND: brown, fine to medium, subangular
					28					
		moist		17,26,30	30					
				32						
				34						
	moist		14,18,25	36					very fine to fine Sand	
				38						
	very moist		12,13,18	40				SP	SAND AND SILT: brown, very fine to fine; Silt in middle of sample; Trace Clay, medium stiff, very low plasticity	
				42						
				44						

Client: J.H. Baxter	Location: Arlington, WA	PAGE 2 of 2
Logged By: Derek McGregor	Date Drilled: December 22 & 23 2009	 <p>Premier ENVIRONMENTAL SERVICES, INC.</p> <p>Project Name: J.H. Baxter - Supplemental Groundwater Project No: 209066.00 Task 2</p>
Driller: Cascade Drilling	Borehole Diameter: 6 inch	
Drilling Method: HSA	Borehole Depth: 85 feet	
Sampling Method: Hydropunch	Well Diameter: n/a	
Casing Type: n/a	Well Depth: n/a	
Slot Size: n/a	Casing Stickup: n/a	
Gravel Pack: n/a	Water Table: ~42 feet bls	

Boring SB-72 (cont.)						Elevation (feet msl) ~140		Northing (feet) n/a	Easting (feet) n/a
Boring Completion	Water Level	Moisture Content	Vapor Concentration (ppm)	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION
Backfill						Recovery	Interval		
		wet		8,13,17	46			SM-ML	SAND: brown, very fine to fine, well sorted
					48				
		wet		10,15,15	50				
					52				
					54				@ 55-56 feet Hydropunch, leave overnight (up to 17 hours), collected GW-72-1
					56				
					58				
		wet		7,10,16	60			SW	
					62				SAND AND GRAVEL: brown, fine to medium, subrounded, moderately sorted
					64				
					66				
					68				
		wet		50+	70			SP	SAND: brown, very fine to coarse, subangular, moderately sorted
					72				
					74				
					76				
					78				@ 74-75 feet Hydropunch, wait 35 minutes, collected GW-72-3
		wet		9,10,15	80				
					82				
					84				
									@ 85-86 feet Hydropunch, wait 30 minutes, collected GW-72-4
									Boring terminated at 85 feet and backfilled with bentonite chips and capped with cement



Location: Arlington, WA
Date Drilled: December 21 & 22 2009
Borehole Diameter: 6 inch
Borehole Depth: 85 feet
Well Diameter: n/a
Well Depth: n/a
Casing Stickup: n/a
Water Table: ~42 feet bls




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**Project Name: J.H. Baxter -
Supplemental Groundwater
Project No: 209066.00 Task 2**


Boring SB-73					Elevation (feet msl) ~140		Northing (feet) n/a		Easting (feet) n/a	
Boring Completion	Water Level	Moisture Content	Groundwater Sample Interval	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION	
Backfill						Recovery	Interval			
<div>Cement Plug</div> <div>Bentonite Chips</div>					2			SW	SAND AND GRAVEL: brown, fine to coarse, subangular to subrounded; Trace Cobbles, poorly sorted	
					4					
		moist		10,13,21	6					
					8					
		moist		13,15,16	10				no Cobbles, moderately sorted	
					12					
					14					
		moist		16,20,25	16					
					18					
		moist		12,21,30	20				trace Gravel; subrounded, moderately sorted	
					22					
					24					
		moist		19,20,25	26				SAND: fine to very coarse; Trace Gravel, fine, well sorted	
					28					
		moist		10,17,21	30			SP	SAND: brown, very fine to fine, moderately sorted	
				32						
				34						
	moist		15,19,23	36						
				38						
	moist		11,18,20	40						
				42						
				44						

Client: J.H. Baxter		Location: Arlington, WA		PAGE 2 of 2						
Logged By: Derek McGregor		Date Drilled: December 21 & 22 2009		<div> Project Name: J.H. Baxter - Supplemental Groundwater Project No: 209066.00 Task 2</div>						
Driller: Cascade Drilling		Borehole Diameter: 6 inch								
Drilling Method: HSA		Borehole Depth: 85 feet								
Sampling Method: Hydropunch		Well Diameter: n/a								
Casing Type: n/a		Well Depth: n/a								
Slot Size: n/a		Casing Stickup: n/a		Elevation (feet msl) ~140						
Gravel Pack: n/a		Water Table: ~42 feet bls								
Northing (feet) n/a		Easting (feet) n/a								
Boring SB-73 (cont.)										
Boring Completion		Water Level	Moisture Content	Vapor Concentration (ppm)	Blow Counts	Depth (feet)	Sample		Soil Type	LITHOLOGY / DESCRIPTION
Backfill							Recovery	Interval		
		wet		9,15,18	46			SP	SAND: brown, very fine to fine, moderately sorted	
					48					
		wet		7,11,14	50					
					52					
					54					
					56				@ 55-56 feet Hydropunch, wait 12 hours, collected GW-73-1	
					58					
		wet		50+	60				well sorted	
					62					
					64					
					66				@ 65-66 feet Hydropunch, wait 35 minutes, collected GW-73-2	
					68					
		wet		50+	70					
					72					
					74					
					76				@ 75-76 feet Hydropunch, wait 20 minutes, collected GW-73-3	
					78					
		wet		50+	80				refusal	
					82					
					84				@ 85-86 feet Hydropunch, wait 35 minutes, collected GW-73-4	
								Boring terminated at 85 feet and backfilled with bentonite chips and capped with cement		

Client: J.H. Baxter	Location: Arlington, WA	PAGE 1 of 2
Logged By: Derek McGregor	Date Drilled: December 19 & 21, 2009	 Project Name: J.H. Baxter - Supplemental Groundwater Project No: 209066.00 Task 2
Driller: Cascade Drilling	Borehole Diameter: 6 inch	
Drilling Method: HSA	Borehole Depth: 85 feet	
Sampling Method: Hydropunch	Well Diameter: n/a	
Casing Type: n/a	Well Depth: n/a	
Slot Size: n/a	Casing Stickup: n/a	
Gravel Pack: n/a	Water Table: ~42 feet bls	

Boring SB-74						Elevation (feet msl)		Northing (feet)	Easting (feet)
						~140		n/a	n/a
Boring Completion	Water Level	Moisture Content	Groundwater Sample Interval	Blow Counts	Depth (feet)	Sample		LITHOLOGY / DESCRIPTION	
Backfill						Recovery	Interval		
Cement Plug					2			SW SAND: brown, fine to coarse, subangular; Little Gravel, fine to coarse, subrounded	
					4				
Bentonite Chips		moist		11,11,13	6			trace Cobbles, subrounded	
					8				
		moist		13,12,11	10				
					12			SAND: fine to medium, subangular, well sorted; Trace Gravel, fine to medium, subrounded	
		moist		15,17,18	16				
					18				
		moist		18,20,26	20			same as above, except one cobble in sample	
					22				
		moist		21,26,29	26				
					28			SAND: @first 0.6', brown, very fine to medium, subangular, well sorted; @last 0.3' Silt: Trace Clay, medium stiff, low plasticity	
		moist		15,18,18	30				
					32				
		moist		11,16,19	36			SILT: brown; Trace Clay, medium stiff, low plasticity	
					38				
		very moist		16,20,23	40				
					42			SP SAND: brown, very fine to fine, subangular, well sorted	
					44				

Client: J.H. Baxter	Location: Arlington, WA	PAGE 2 of 2
Logged By: Derek McGregor	Date Drilled: December 19 & 21, 2009	 <p>Premier ENVIRONMENTAL SERVICES, INC.</p> <p>Project Name: J.H. Baxter - Supplemental Groundwater Project No: 209066.00 Task 2</p>
Driller: Cascade Drilling	Borehole Diameter: 6 inch	
Drilling Method: HSA	Borehole Depth: 85 feet	
Sampling Method: Hydropunch	Well Diameter: n/a	
Casing Type: n/a	Well Depth: n/a	
Slot Size: n/a	Casing Stickup: n/a	
Gravel Pack: n/a	Water Table: ~42 feet bls	

Boring SB-74 (cont.)						Elevation (feet msl)	Northing (feet)	Easting (feet)
						~140	n/a	n/a
Boring Completion	Water Level	Moisture Content	Vapor Concentration (ppm)	Blow Counts	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
Backfill								
		very moist		10,17,20	46		SP	SAND: brown, very fine to fine, subangular, well sorted
					48			
		very moist		21,50+	50			
					52			
					54			
					56			@ 55-56 feet Hydropunch, 41 hours (duplicate sample from 14:30 PM 12-19 to 12-21), collected GW-74-1 and GW-74-5
					58			
		wet		4,10,21	60		SW	SAND AND GRAVEL: brown, subangular, very fine to medium, moderated to well sorted; Trace Gravel, fine to medium, subrounded, poorly sorted
					62			
					64			
					66			
					68			
					70			@ 65-66 feet Hydropunch, wait 100 minutes, collected GW-74-2
		wet		9,13,20	72		SP	SAND: brown, very fine to fine, subangular, well sorted
					74			
					76			
					78			
					80			
		wet		5,9,12	82			@ 75-76 feet Hydropunch, wait 30 minutes, collected GW-74-3
					84			@ 85-86 feet Hydropunch, wait 30 minutes, collected GW-74-4
								Boring terminated at 85 feet and backfilled with bentonite chips and capped with cement

Attachment 2

Quality Assurance Review



129 Monohon Landing Road
Raymond, WA 98577

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kgunderson@premiercorp-usa.com

MEMORANDUM

Date: January 13, 2010
To: J. Stephen Barnett, Premier Environmental Services, Inc.
From: Kathy J. Gunderson, Senior Quality Assurance Chemist
Subject: Review of Screening Data from Groundwater Samples Collected
December 2009
Project: Supplemental Remedial Investigation, J. H. Baxter Arlington,
Washington

1.0 Introduction

This memorandum presents the cursory validation of the analytical data used for screening groundwater samples collected for the Supplemental Remedial Investigation at the J. H. Baxter Arlington, Washington facility. Thirty-six groundwater samples, two field duplicates, and two field blanks were collected between December 14th and 23rd, 2009. The analyses were performed by ALS Laboratory Group, located in Everett, Washington. The samples were analyzed for pentachlorophenol by the method listed in Table 1.

The criteria used to qualify data are from the *Sampling and Analysis and Data Management Plan for the Site Investigation Work Plan J. H. Baxter Arlington Facility* (SADMP) (Baxter 2002), the *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA 1999), the analytical method, or the professional judgment of the validation chemist. The following laboratory deliverables were reviewed during the validation process:

- Chain-of-custody (COC) documentation to assess holding times and verify report completeness
- Laboratory quality control (QC) sample results, including method blanks, surrogate spikes, laboratory control sample/laboratory control sample duplicates (LCS/LCSDs)
- Analytical results to verify reporting limits
- Field QC samples to assess field duplicate precision and field blank contamination

Review of Screening Data from Groundwater Samples Collected December 2009
Supplemental Remedial Investigation, J. H. Baxter Arlington, Washington
January 13, 2010

Field duplicate precision is presented in Table 2 and the qualified data are summarized in Table 3 at the end of this memorandum. Data qualifier flags have been added to the hardcopy laboratory report used for validation and the project database.

Table 1—Sample Data Reviewed

Station ID	Depth ft bgs ^a	Sample ID	Date Collected	Laboratory ID	PCP ^b
SB-66	50	GW-66-1	12-14-09	0912076-01	X
SB-66	60	GW-66-2	12-14-09	0912076-02	X
SB-66	68.5	GW-66-3	12-14-09	0912076-03	X
Equipment rinse blank	--	Rinsate/EB-1	12-14-09	0912076-04	X
SB-66	80	GW-66-4	12-14-09	0912076-05	X
SB-67	50 & 55	GW-67-1	12-15-09	0912088-01	X
SB-67	62	GW-67-2	12-15-09	0912088-02	X
SB-67	70	GW-67-3	12-15-09	0912088-03	X
SB-67	79	GW-67-4	12-15-09	0912088-04	X
SB-67 (Field duplicate)	79	Duplicate-1	12-15-09	0912088-05	X
SB-68	45	GW-68-1	12-16-09	0912101-01	X
SB-68	55	GW-68-2	12-16-09	0912101-02	X
SB-68	65	GW-68-3	12-16-09	0912101-03	X
SB-68	75	GW-68-4	12-16-09	0912101-04	X
SB-69	45	GW-69-1	12-17-09	0912112-01	X
SB-69	55	GW-69-2	12-17-09	0912112-02	X
SB-69	65	GW-69-3	12-17-09	0912112-03	X
SB-69	75	GW-69-4	12-17-09	0912112-04	X
SB-70	45	GW-70-1	12-17-09	0912131-01	X
SB-70	55	GW-70-2	12-17-09	0912131-02	X
SB-70	65	GW-70-3	12-18-09	0912131-03	X
SB-70	75	GW-70-4	12-18-09	0912131-04	X
SB-71	55	GW-71-1	12-18-09	0912131-05	X
SB-71	65	GW-71-2	12-19-09	0912132-01	X
SB-71	75	GW-71-3	12-19-09	0912132-02	X
SB-71	85	GW-71-4	12-19-09	0912132-03	X
SB-74	55	GW-74-1	12-21-09	0912137-01	X
SB-74	65	GW-74-2	12-21-09	0912137-02	X
SB-74	75	GW-74-3	12-21-09	0912137-03	X
SB-74	85	GW-74-4	12-21-09	0912137-04	X
SB-74 (Field duplicate)	55	GW-74-5	12-21-09	0912137-05	X
SB-73	55	GW-73-1	12-22-09	0912148-01	X
SB-73	65	GW-73-2	12-22-09	0912148-02	X
SB-73	75	GW-73-3	12-22-09	0912148-03	X
SB-73	85	GW-73-4	12-22-09	0912148-04	X
Equipment rinse blank	--	GW-73-5	12-22-09	0912148-05	X
SB-72	55	GW-72-1	12-23-09	0912150-01	X
SB-72	65	GW-72-2	12-23-09	0912150-02	X
SB-72	74	GW-72-3	12-23-09	0912150-03	X
SB-72	65	GW-72-4	12-23-09	0912150-04	X

^a Feet below ground surface

^b Pentachlorophenol by Method 3510/8270 (USEPA 1996) Selective ion monitoring (SIM)

2.0 Data Validation Findings

2.1 Custody, Preservation, and Completeness – Acceptable

Sample custody was maintained as required from sample collection to receipt at the laboratory. The samples were received intact and were properly preserved. The laboratory reports are complete and contain results for all samples and tests requested on the COC forms.

- Pentachlorophenol was not reported in the LCS/LCSD analyses of laboratory reports 0912132, 0912137, 0912148, and 0912150. The laboratory resubmitted complete reports electronically.

2.2 Pentachlorophenol Analyses

2.2.1 Holding Times – Acceptable

The samples were extracted within the required holding time of seven days from collection and analyzed within the required holding time of 40 days from extraction.

2.2.2 Blank Analyses – Acceptable with Qualification

2.2.2.1 Method Blanks

Method blanks were analyzed at the required frequency of one per extraction batch. Pentachlorophenol was not detected in the method blanks.

2.2.2.2 Field Blanks

Two equipment rinsate blanks, sample Rinsate/EB-1 and GW-73-5, were collected with the samples. Pentachlorophenol was detected in one of the rinsate blanks as discussed below.

- Pentachlorophenol was detected in the rinsate blank Rinsate/EB-1 at 1.9 µg/L. Functional Guidelines prescribes three qualifications schemes for blank contamination: (1) associated sample concentrations greater than the action level (five times the blank concentration) are not qualified, (2) associated sample concentrations less than the action level and greater than the reporting limit are qualified as undetected (U) at the reported value, and (3) associated sample concentrations less than the action level and less than the reporting limit are qualified as undetected (U) at the reporting limit. The associated samples were qualified as shown below.

Sample ID	Analyte	Qualifier	Quality Control Exceedance
GW-66-2	Pentachlorophenol	U at reported value	Result > RL & < 5 times the field blank level

2.2.3 Surrogate Analyses – Acceptable with Discussion

Except as noted below, surrogate compounds were reported for all samples, blanks, and QC samples. The recovery values are within the laboratory control limits.

- Surrogate recovery values were not reported for the QC samples (method blanks, LCSs or LCSDs). Data qualifiers are not required.

2.2.4 Matrix Spike/Matrix Spike Duplicate Analyses

MS/MSDs were not analyzed with the samples due to the screening nature of the analyses.

2.2.5 Laboratory Control Sample Analyses – Acceptable

LCS/LCSDs were analyzed at the required frequency of one per extraction batch. The recovery values are within the laboratory control limits.

2.2.6 Laboratory Reporting Limits – Acceptable

The reporting limit goal of 0.50 µg/L for pentachlorophenol was met for samples that were analyzed undiluted.

2.2.7 Field Duplicates – Acceptable

Two field duplicates were collected with the samples. The SADMP criterion for field duplicate precision of water samples is RPD values less than or equal to 35. Field duplicate precision is acceptable as shown by the low RPD values listed in Table 2.

2.2.8 Overall Assessment of Data Useability

The usability of the data is based on the EPA guidance documents noted previously. Upon consideration of the information presented here; the data are acceptable. The data qualifier flags modify the usefulness of the individual values.

3.0 Data Qualifier Definitions

The following data validation qualifiers were used in the review of the organic analyses in this data set. These qualifiers are from the *Contract Laboratory Program National Functional Guidelines for Organic Data Review*.

- U The analyte was analyzed for but not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a “tentative identification”.
- NJ The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the samples and meet quality control criteria. The presence or absence of the analyte cannot be verified.

4.0 References

Baxter. 2002. Sampling and Analysis and Data Management Plan for the Site Investigation Work Plan J. H. Baxter Arlington Facility. Revision 2. Prepared by the J. H. Baxter Project Team. Prepared for EPA Region 10. May 15, 2002.

USEPA. 1996. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) Third Edition, Updates I, II, IIA, IIB, and III. United States Environmental Protection Agency. Office of Solid Waste. December 1996.

USEPA. 1999. Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency Office of Emergency and Remedial Response. EPA540/R-99/008. October 1999.

Table 2—Field Duplicate Precision

Sample ID	Duplicate ID	Analyte	Sample Value ^a	Duplicate Value ^a	RPD ^b
GW-67-4	Duplicate-01	Pentachlorophenol	2.3	2.6	12
GW-74-1	GW-74-5	Pentachlorophenol	2.4	2.5	4.1

^a Units are µg/L

^b Relative percent difference

Table 3—Summary of Qualified Data

Sample ID	Analyte	Qualifier	Quality Control Exceedance
GW-66-2	Pentachlorophenol	U at reported value	Result > RL & < 5 times the field blank level

Attachment 3

Laboratory Reports



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912076
DATE RECEIVED: 12/14/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: None Given
CLIENT SAMPLE ID: 12/14/2009 GW-66-1
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	ND	0.50	1	UG/L	12/15/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912076
DATE RECEIVED: 12/14/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: None Given
CLIENT SAMPLE ID: 12/14/2009 GW-66-2
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	1.6	0.50	1	UG/L	12/15/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912076
DATE RECEIVED: 12/14/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: None Given
CLIENT SAMPLE ID: 12/14/2009 GW-66-3
ALS SAMPLE #: -03

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	300	10	20	UG/L	12/15/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

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APPROVED BY:



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ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912076
DATE RECEIVED: 12/14/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: None Given
CLIENT SAMPLE ID: 12/14/2009 Rinsate/EB-1
ALS SAMPLE #: -04

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	1.9	0.50	1	UG/L	12/15/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912076
DATE RECEIVED: 12/14/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: None Given
CLIENT SAMPLE ID: 12/14/2009 GW-66-4
ALS SAMPLE #: -05

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	320	10	20	UG/L	12/15/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

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APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

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CLIENT: Premier Environmental
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DATE: 12/16/2009
ALS JOB#: 0912076
DATE RECEIVED: 12/14/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: None Given

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
0912076-01	EPA-8270 SIM	2,4,6-Tribromophenol	105%
0912076-02	EPA-8270 SIM	2,4,6-Tribromophenol	97%
0912076-03 20X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	82%
0912076-04	EPA-8270 SIM	2,4,6-Tribromophenol	105%
0912076-05 20X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	84%

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

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333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912076
DATE RECEIVED: 12/14/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: None Given

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MB-121509W	Water	EPA-8270 SIM	Pentachlorophenol	ND(<0.50)	UG/L

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912076
DATE RECEIVED: 12/14/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: None Given

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
432	Water	EPA-8270 SIM	Pentachlorophenol	10000	83%	85%	3
432	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	5000	84%	83%	1

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912088
DATE RECEIVED: 12/15/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/15/2009 GW-67-1
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	2.5	0.50	1	UG/L	12/15/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912088
DATE RECEIVED: 12/15/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/15/2009 GW-67-2
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	1.7	0.50	1	UG/L	12/15/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912088
DATE RECEIVED: 12/15/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/15/2009 GW-67-3
ALS SAMPLE #: -03

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	2.1	0.50	1	UG/L	12/15/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

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APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912088
DATE RECEIVED: 12/15/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/15/2009 GW-67-4
ALS SAMPLE #: -04

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	2.3	0.50	1	UG/L	12/15/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:



CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912088
DATE RECEIVED: 12/15/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/15/2009 Duplicate-1
ALS SAMPLE #: -05

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	2.6	0.50	1	UG/L	12/15/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:



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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912088
DATE RECEIVED: 12/15/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
0912088-01	EPA-8270 SIM	2,4,6-Tribromophenol	111%
0912088-02	EPA-8270 SIM	2,4,6-Tribromophenol	107%
0912088-03	EPA-8270 SIM	2,4,6-Tribromophenol	109%
0912088-04	EPA-8270 SIM	2,4,6-Tribromophenol	109%
0912088-05	EPA-8270 SIM	2,4,6-Tribromophenol	109%

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CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912088
DATE RECEIVED: 12/15/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MB-121509W	Water	EPA-8270 SIM	Pentachlorophenol	ND(<0.50)	UG/L

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/16/2009
ALS JOB#: 0912088
DATE RECEIVED: 12/15/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
432	Water	EPA-8270 SIM	Pentachlorophenol	10000	83%	85%	3
432	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	5000	84%	83%	1

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/17/2009
ALS JOB#: 0912101
DATE RECEIVED: 12/16/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/16/2009 GW-68-1
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	ND	1.0	2	UG/L	12/17/2009	RAL

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
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DATE: 12/17/2009
ALS JOB#: 0912101
DATE RECEIVED: 12/16/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/16/2009 GW-68-2
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	ND	1.0	2	UG/L	12/17/2009	RAL

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
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DATE: 12/17/2009
ALS JOB#: 0912101
DATE RECEIVED: 12/16/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/16/2009 GW-68-3
ALS SAMPLE #: -03

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	ND	1.0	2	UG/L	12/17/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

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ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/17/2009
ALS JOB#: 0912101
DATE RECEIVED: 12/16/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/16/2009 GW-68-4
ALS SAMPLE #: -04

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	220	10	20	UG/L	12/17/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:



CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/17/2009
ALS JOB#: 0912101
DATE RECEIVED: 12/16/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
0912101-01 2X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	80%
0912101-02 2X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	80%
0912101-03 2X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	78%
0912101-04 20X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	S2

S2- Surrogate outside of control limits due to dilution.

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/17/2009
ALS JOB#: 0912101
DATE RECEIVED: 12/16/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MB-121609W	Water	EPA-8270 SIM	Pentachlorophenol	ND(<0.50)	UG/L
MB-121609W	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	ND(<0.020)	UG/L

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ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/17/2009
ALS JOB#: 0912101
DATE RECEIVED: 12/16/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
432	Water	EPA-8270 SIM	Pentachlorophenol	10000	83%	85%	3
432	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	5000	84%	83%	1

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/18/2009
ALS JOB#: 0912112
DATE RECEIVED: 12/17/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/17/2009 GW-69-1
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	3.0	0.50	1	UG/L	12/17/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:



CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/18/2009
ALS JOB#: 0912112
DATE RECEIVED: 12/17/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/17/2009 GW-69-2
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	2.2	0.50	1	UG/L	12/17/2009	RAL

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APPROVED BY:



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ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/18/2009
ALS JOB#: 0912112
DATE RECEIVED: 12/17/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/17/2009 GW-69-3
ALS SAMPLE #: -03

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	850	40	80	UG/L	12/18/2009	RAL

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/18/2009
ALS JOB#: 0912112
DATE RECEIVED: 12/17/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/17/2009 GW-69-4
ALS SAMPLE #: -04

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	110	2.5	5	UG/L	12/18/2009	RAL

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CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/18/2009
ALS JOB#: 0912112
DATE RECEIVED: 12/17/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
0912112-01	EPA-8270 SIM	2,4,6-Tribromophenol	86%
0912112-02	EPA-8270 SIM	2,4,6-Tribromophenol	96%
0912112-03 80X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	73%
0912112-04 5X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	74%

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CLIENT: Premier Environmental
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Suite 510
Portland, OR 97204

DATE: 12/18/2009
ALS JOB#: 0912112
DATE RECEIVED: 12/17/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MB-121709W	Water	EPA-8270 SIM	Pentachlorophenol	ND(<0.50)	UG/L
MB-121709W	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	ND(<0.020)	UG/L

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CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/18/2009
ALS JOB#: 0912112
DATE RECEIVED: 12/17/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
432	Water	EPA-8270 SIM	Pentachlorophenol	10000	83%	85%	3
432	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	5000	84%	83%	1

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/21/2009
ALS JOB#: 0912131
DATE RECEIVED: 12/18/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/17/2009 GW-70-1
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	5.4	0.50	1	UG/L	12/18/2009	RAL

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/21/2009
ALS JOB#: 0912131
DATE RECEIVED: 12/18/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/17/2009 GW-70-2
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	2.5	0.50	1	UG/L	12/18/2009	RAL

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CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
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DATE: 12/21/2009
ALS JOB#: 0912131
DATE RECEIVED: 12/18/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/18/2009 GW-70-3
ALS SAMPLE #: -03

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	3.4	0.50	1	UG/L	12/18/2009	RAL

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CLIENT: Premier Environmental
333 SW 5th Ave
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DATE: 12/21/2009
ALS JOB#: 0912131
DATE RECEIVED: 12/18/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/18/2009 GW-70-4
ALS SAMPLE #: -04

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	ND	1.0	2	UG/L	12/21/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
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DATE: 12/21/2009
ALS JOB#: 0912131
DATE RECEIVED: 12/18/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/18/2009 GW-71-1
ALS SAMPLE #: -05

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	2.3	0.50	1	UG/L	12/19/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

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CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/21/2009
ALS JOB#: 0912131
DATE RECEIVED: 12/18/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
0912131-01	EPA-8270 SIM	2,4,6-Tribromophenol	104%
0912131-02	EPA-8270 SIM	2,4,6-Tribromophenol	98%
0912131-03	EPA-8270 SIM	2,4,6-Tribromophenol	107%
0912131-04 2X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	75%
0912131-05	EPA-8270 SIM	2,4,6-Tribromophenol	100%

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333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/21/2009
ALS JOB#: 0912131
DATE RECEIVED: 12/18/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MB-121709W	Water	EPA-8270 SIM	Pentachlorophenol	ND(<0.50)	UG/L
MB-121709W	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	ND(<0.020)	UG/L
MB-121809W	Water	EPA-8270 SIM	Pentachlorophenol	ND(<0.50)	UG/L
MB-121809W	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	0.024	UG/L

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CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/21/2009
ALS JOB#: 0912131
DATE RECEIVED: 12/18/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
432	Water	EPA-8270 SIM	Pentachlorophenol	10000	83%	85%	3
432	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	5000	84%	83%	1
445	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	5000	81%	76%	6

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/22/2009
ALS JOB#: 0912132
DATE RECEIVED: 12/21/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/19/2009 GW-71-2
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	2.6	0.50	1	UG/L	12/21/2009	RAL

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APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/22/2009
ALS JOB#: 0912132
DATE RECEIVED: 12/21/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/19/2009 GW-71-3
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	ND	1.0	2	UG/L	12/21/2009	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/22/2009
ALS JOB#: 0912132
DATE RECEIVED: 12/21/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/19/2009 GW-71-4
ALS SAMPLE #: -03

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	ND	1.0	2	UG/L	12/21/2009	RAL

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CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/22/2009
ALS JOB#: 0912132
DATE RECEIVED: 12/21/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
0912132-01	EPA-8270 SIM	2,4,6-Tribromophenol	90%
0912132-02 2X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	75%
0912132-03 2X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	78%

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333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/22/2009
ALS JOB#: 0912132
DATE RECEIVED: 12/21/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MB-122109W	Water	EPA-8270 SIM	Pentachlorophenol	ND(<0.50)	UG/L
MB-122109W	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	ND(<0.020)	UG/L

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
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DATE: 12/22/2009
ALS JOB#: 0912132
DATE RECEIVED: 12/21/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
445	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	5000	81%	76%	6

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/23/2009
ALS JOB#: 0912148
DATE RECEIVED: 12/22/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/22/2009 GW-73-1
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	6.7	0.50	1	UG/L	12/22/2009	RAL

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/23/2009
ALS JOB#: 0912148
DATE RECEIVED: 12/22/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/22/2009 GW-73-2
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	260	10	20	UG/L	12/23/2009	RAL

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DATE: 12/23/2009
ALS JOB#: 0912148
DATE RECEIVED: 12/22/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/22/2009 GW-73-3
ALS SAMPLE #: -03

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	250	5.0	10	UG/L	12/23/2009	RAL

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/23/2009
ALS JOB#: 0912148
DATE RECEIVED: 12/22/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/22/2009 GW-73-4
ALS SAMPLE #: -04

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	28	1.0	2	UG/L	12/23/2009	RAL

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CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/23/2009
ALS JOB#: 0912148
DATE RECEIVED: 12/22/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/22/2009 GW-73-5
ALS SAMPLE #: -05

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	ND	0.50	1	UG/L	12/22/2009	RAL

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APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/23/2009
ALS JOB#: 0912148
DATE RECEIVED: 12/22/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
0912148-01	EPA-8270 SIM	2,4,6-Tribromophenol	79%
0912148-02 20X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	72%
0912148-03 10X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	63%
0912148-04 2X Dilution	EPA-8270 SIM	2,4,6-Tribromophenol	86%
0912148-05	EPA-8270 SIM	2,4,6-Tribromophenol	61%

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ANALYTICAL CHEMISTRY & TESTING SERVICES

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333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/23/2009
ALS JOB#: 0912148
DATE RECEIVED: 12/22/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MB-122209W	Water	EPA-8270 SIM	Pentachlorophenol	ND(<0.50)	UG/L
MB-122209W	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	ND(<0.020)	UG/L

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/23/2009
ALS JOB#: 0912148
DATE RECEIVED: 12/22/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
445	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	5000	81%	76%	6

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 12/28/2009
ALS JOB#: 0912150
DATE RECEIVED: 12/23/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/23/2009 GW-72-1
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	2.3	0.50	1	UG/L	12/23/2009	RAL

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Portland, OR 97204

DATE: 12/28/2009
ALS JOB#: 0912150
DATE RECEIVED: 12/23/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/23/2009 GW-72-2
ALS SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	2.6	0.50	1	UG/L	12/23/2009	RAL

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DATE: 12/28/2009
ALS JOB#: 0912150
DATE RECEIVED: 12/23/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/23/2009 GW-72-3
ALS SAMPLE #: -03

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	7.9	0.50	1	UG/L	12/23/2009	RAL

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333 SW 5th Ave
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Portland, OR 97204

DATE: 12/28/2009
ALS JOB#: 0912150
DATE RECEIVED: 12/23/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 12/23/2009 GW-72-4
ALS SAMPLE #: -04

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
Pentachlorophenol	EPA-8270 SIM	2.0	0.50	1	UG/L	12/23/2009	RAL

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333 SW 5th Ave
Suite 510
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DATE: 12/28/2009
ALS JOB#: 0912150
DATE RECEIVED: 12/23/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
0912150-01	EPA-8270 SIM	2,4,6-Tribromophenol	72%
0912150-02	EPA-8270 SIM	2,4,6-Tribromophenol	89%
0912150-03	EPA-8270 SIM	2,4,6-Tribromophenol	90%
0912150-04	EPA-8270 SIM	2,4,6-Tribromophenol	84%

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DATE: 12/28/2009
ALS JOB#: 0912150
DATE RECEIVED: 12/23/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MB-122309W	Water	EPA-8270 SIM	Pentachlorophenol	ND(<0.50)	UG/L
MB-122309W	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	ND(<0.020)	UG/L

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DATE: 12/28/2009
ALS JOB#: 0912150
DATE RECEIVED: 12/23/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
445	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	5000	81%	76%	6

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ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 1/29/2010
ALS JOB#: 1001073
DATE RECEIVED: 1/19/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2
CLIENT SAMPLE ID: 1/19/2010 SS-1
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	ND	25	1	MG/KG	1/25/2010	EBS
TPH-Oil Range	NWTPH-DX	ND	50	1	MG/KG	1/25/2010	EBS
Naphthalene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Acenaphthene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Fluorene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Pentachlorophenol (TCLP)	EPA-8270/1311	ND	2.0	1	UG/L	1/27/2010	RAL
Phenanthrene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Anthracene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Pyrene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Benzo[A]Anthracene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Chrysene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Benzo[B]Fluoranthene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Benzo[K]Fluoranthene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Benzo[A]Pyrene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Indeno[1,2,3-Cd]Pyrene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL
Dibenz[A,H]Anthracene (TCLP)	EPA-8270/1311	ND	0.080	1	UG/L	1/27/2010	RAL

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ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Premier Environmental
333 SW 5th Ave
Suite 510
Portland, OR 97204

DATE: 1/29/2010
ALS JOB#: 1001073
DATE RECEIVED: 1/19/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
1001073-01	NWTPH-DX	C25	70%
1001073-01	EPA-8270 SIM	Terphenyl-d14	104%
1001073-01	EPA-8270 SIM	2,4,6-Tribromophenol	97%

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DATE: 1/29/2010
ALS JOB#: 1001073
DATE RECEIVED: 1/19/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MB-011810S	Soil	NWTPH-DX	TPH-Diesel Range	ND(<25)	MG/KG
MB-011810S	Soil	NWTPH-DX	TPH-Oil Range	ND(<50)	MG/KG
MBLK-1272010	TCLP Extract	EPA-8270/1311	Naphthalene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Acenaphthene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Fluorene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Pentachlorophenol (TCLP)	ND(<2.0)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Phenanthrene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Anthracene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Pyrene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Benzo[A]Anthracene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Chrysene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Benzo[B]Fluoranthene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Benzo[K]Fluoranthene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Benzo[A]Pyrene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Indeno[1,2,3-Cd]Pyrene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Dibenz[A,H]Anthracene (TCLP)	ND(<0.080)	UG/L
MBLK-1272010	TCLP Extract	EPA-8270/1311	Benzo[G,H,I]Perylene (TCLP)	ND(<0.080)	UG/L

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DATE: 1/29/2010
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DATE RECEIVED: 1/19/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Steve Barnett
CLIENT PROJECT ID: 209066 Task 2

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
482	Soil	NWTPH-DX	TPH-Diesel Range	250	89%	87%	2
R67621	TCLP Extract	EPA-8270/1311	Naphthalene (TCLP)	20	62%	63%	1
R67621	TCLP Extract	EPA-8270/1311	Acenaphthene (TCLP)	20	77%	79%	2
R67621	TCLP Extract	EPA-8270/1311	Pentachlorophenol (TCLP)	40	80%	86%	7
R67621	TCLP Extract	EPA-8270/1311	Pyrene (TCLP)	20	100%	95%	5
R67621	TCLP Extract	EPA-8270/1311	Benzo[G,H,I]Perylene (TCLP)	20	92%	92%	1

APPROVED BY: